Linguistic Inquiry
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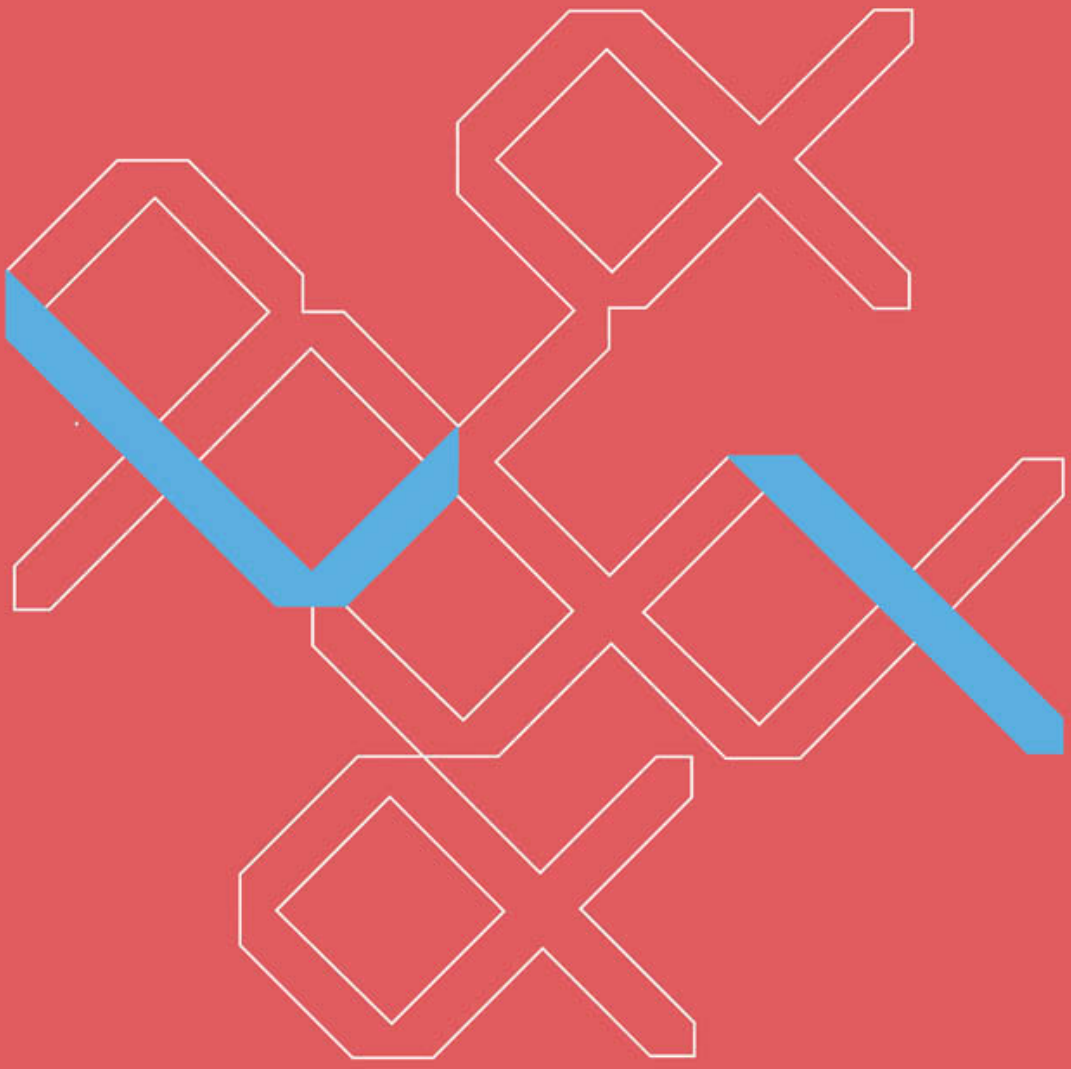
When Arguments Merge

Elise Newman



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Elise Newman

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For Arnie and Bingy

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No wise fish would go anywhere without a porpoise.
—Lewis Carroll, *Alice's Adventures in Wonderland*

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Series Foreword

We are pleased to present the eighty-third volume in the series Linguistic Inquiry Monographs. These monographs present new and original research beyond the scope of the article. We hope they will benefit our field by bringing to it perspectives that will stimulate further research and insight.

Originally published in limited edition, the Linguistic Inquiry Monographs are now more widely available. This change is due to the great interest engendered by the series and by the needs of a growing readership. The editors thank the readers for their support and welcome suggestions about future directions for the series.

Samuel Jay Keyser
for the Editorial Board

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The inspiration for this book originated in a conversation with Kenyon Branan, to whom I am very grateful. Our conversation began with some thoughts on selection, and somehow ended with wh-movement in Mayan, which didn't make a lot of sense at the time, but hopefully will once you've read the book.

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Abbreviations

A	Set A
ABS	Absolutive
ACC	Accusative
AF	Agent Focus
AGR	Agreement
AP	Anti-passive
APPL	Applicative
ASP	Aspect
AUG	Augment
B	Set B
CONJ	Conjunctive Clitic
CL	Clitic
CLF	Classifier
COM	Completive Aspect
DAT	Dative
DET	Determiner
DIM	Diminutive
DIR	Direct
DO	Direct Object
EP	Established Past
ERG	Ergative
EXCL	Exclusive
EXT	External
F	Feminine
FOC	Focus
FUT	Future
FV	Final Vowel
GEN	Genitive
INC	Incompletive Aspect
INCH	Inchoative Aspect
INDF	Indefinite
INST	Instrumental
INT	Internal
INTER	Interrogative
IO	Indirect Object
IPFV	Imperfective
IRR	Irrealis
ITV	Intransitive
LOC	Locative
M	Masculine
N	Neuter
NACT	Non-active
NEG	Negation
NMLZ	Nominalization
NOM	Nominative
OBJ	Object
OBL	Oblique
OBLV	Oblique Voice
OV	Object Voice
OM	Object Marking
PART	Participant
PASS	Passive
PFV	Perfective
PL	Plural
POSS	Possessed
P	Preposition
PRES	Present
PST	Past

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PTCP	Participal
RDR	Redirective
REL	Relative Complementizer
REFL	Reflexive
REM	Remote
RN	Relational Noun
RS	Relative Suffix
SG	Singular
SM	Subject Marking
SUBJ	Subject
SV	Subject Voice
TV	Transitive
UNM	Unmarked Case

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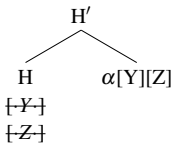
1 Introduction

This monograph defends a novel approach to argument structure, which predicts structural relations between arguments from conditions on feature-checking. Assuming that all kinds of Merge (external Merge, A-movement, and Ā-movement) are driven by features (Chomsky 1995), I propose that subset relationships between different sets of features can constrain the distribution of arguments in unexpected ways. The distribution of arguments in different contexts has many observable correlates, such as the case and agreement alignment of a clause, word order, accessibility to movement, and binding profiles. We will see that unexplained puzzles in each of these domains can be accounted for by a reanalysis of basic clause structure, which is predicted by the logic of feature-checking advanced here.

The logic of the approach is that subset relationships between feature sets create potential for bleeding derivations. Suppose that a head selects for two kinds of elements, one bearing the feature [Y] and one bearing the feature [Z]. An element bearing both [Y] and [Z] should be able to check both features, while an element bearing only one of those features can check only one. Assuming that a single instance of Merge can result in the checking of multiple features, the order of Merge matters here—merging α[Y][Z] first bleeds the possibility of merging both elements, while merging α[Y] first does not.

(1) Feeding/bleeding due to subset relationships between features sets

a. Merging α[Y][Z] before α[Y] bleeds α[Y] by checking both features



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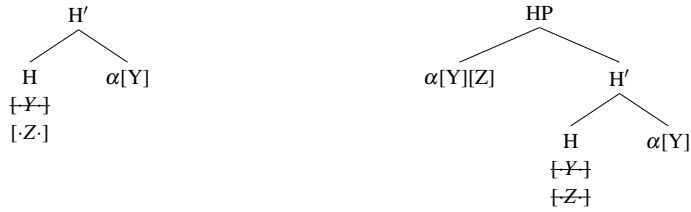
b. Merging α[Y] before α[Y][Z] licenses both



The result is that for certain pairs of elements, one element has the capacity to restrict the distribution of the other, with structural consequences for any phrase containing them both. I show that subset relationships affect structure in two kinds of scenarios: (1) when a wh-argument and a non-wh-argument occupy the same position at some point in the derivation, and (2) when a head selects for both a DP and a non-DP argument. The theory that regulates the distribution of arguments in both scenarios provides an explanation for wh-movement/Voice interactions crosslinguistically as well as puzzling facts about verb phrase syntax more generally.

There are two kinds of observations that inform the approach taken here. First is that there are meta-restrictions on what kinds of subcategorization requirements verbs can have within and across languages. As discussed by K. Hale and S. J. Keyser (1993), Ken Hale and Samuel Jay Keyser (2002), Marelj (2002), and Juarros (2003), among others, the extended projection of a verb cannot contain more than four arguments crosslinguistically. We will additionally see that there are restrictions on the categorial composition of these arguments: at most two of them can be DPs, and at most two of them can be non-DPs. These kinds of restrictions indicate that the space of attested selectional patterns is much smaller than the space of imaginable ones, which demands an explanation.

The second observation is that A-syntax and Ā-syntax influence each other more than originally thought. I say A-syntax and Ā-syntax, rather than A-movement and Ā-movement, because of the nature of the interactions under discussion, which do not obviously reflect properties of movement. We will examine several well-known examples of interactions between wh-movement and Voice, which show that the distribution of wh-elements sometimes affects the acceptable distribution of non-wh-elements (and/or vice versa). I will argue that both of these kinds of patterns, meta-restrictions on subcategorization and wh-movement/Voice interactions, lend themselves to the following conclusion: the position of one kind of phrase is impacted by the presence of another kind of phrase, due to how the features on these respective phrases interact with conditions on feature-checking.

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These two kinds of observations have separately received much attention throughout the literature. Attempting to leverage the logic in (1) to explain crosslinguistic patterns therefore directly or indirectly bears on a number of debates in syntactic theory. In my opinion, the most fundamental issue addressed by this monograph has to do with the source and nature of features driving syntactic operations. While it is common to treat Merge-inducing features as properties of lexical items, I will motivate an alternative view, in which they are grouped according to syntactic category.

I propose that this choice allows the combinatorial system to provide a very limited amount of flexibility in what kinds of structures it can generate: just enough to capture the range of verb phrases that we find and no more. More specifically, I argue that the inventory of Merge-inducing features is quite small, as is the inventory of categories. Because it is categories, not individual lexical items, that are defined as having a certain set of Merge-inducing features, the combinatorial system produces a much smaller set of structures than it might have if the number of primitives were as vast as the lexicon.

This choice hearkens back to discussion in the Minimalist Program, where Chomsky argued that we should eliminate the phrase-structure rules of previous frameworks because they were redundant with information in the lexicon. According to his reasoning, if the lexicon already contains features driving c-selection, and the derivation can be instructed from those features according to conditions on feature-checking, then stating separate rules of combination is unnecessary. Though the present theory does not contain any phrase structure rules, the spirit of the proposal is the opposite of what Chomsky suggested. Rather than remove structure-building information from the syntax, I essentially propose that we remove structure-building information from the lexicon, instead relegating it to the syntax proper. The result is a system in which conditions on feature-checking can be leveraged to explain generalizations about verb phrase syntax that transcend the properties of individual lexical items, creating a space of possible structures and structural variation within and across languages.

One of the advantages of this approach is it provides a new hypothesis space for explaining wh-movement/Voice interactions. In many languages, wh-movement of certain arguments has surprising implications for the kinds of Voice that are available to the clause. For example, wh-movement of an external argument in many Mayan languages obligatorily corresponds to intransitive morphosyntax, despite the fact that the clause is "logically" transitive (i.e., it has both internal and external arguments). A regular transitive clause in Q'anjob'al is shown in (2), where we observe agreement with both arguments and transitive verbal morphology. Attempting to wh-move the external argument, shown

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in (3), requires the clause to bear different morphology—there is no agreement with the external argument, and the verb has intransitive-looking affixes.

(2) Max-ach y-il-a'.
PFV-OBJ2SG SUBJ3SG-see-TV
"She saw you." (Q'anjob'al; Coon, Pedro, and Preminger 2014, ex. 12a, p. 187)

(3) Maktxel max-ach il-**on**-i?
who PFV-OBJ2SG see-AF-ITV
"Who saw you?" (Q'anjob'al; ex. 1, p. 180)

These kinds of phenomena are surprising on standard assumptions because it is typically assumed that the factors that contribute to the Voice of a clause are separate from those responsible for wh-movement. The Voice of the clause is thought to be sensitive to A-syntax, which generates the "basic" configuration of arguments and verbs that select them. Wh-movement, by contrast, is Ā-syntax, which may displace arguments from their underlying position but is not expected to alter case/agreement outcomes predetermined by A-syntactic considerations. The present view, however, upends this distinction for the following reasons: (1) features driving wh-Merge and features driving argument-Merge have the same source and are subject to the same conditions, and (2) wh-arguments have a superset of features that non-wh-arguments have. Wh-arguments have whatever category feature their non-wh-counterparts have, in addition to a [wh] feature. The distribution of wh- vs. non-wh-arguments is therefore impacted by the logic in (1), which I propose may affect their base as well as their derived positions.

That wh-movement can affect basic clause structure is entailed by the proposal that wh-movement proceeds successive-cyclically through the edge of the verbal domain, as well as through the edge of each clause (Chomsky 1986). Following van Urk (2015) and Longenbaugh (2019), among others, we can represent the driver of clause-medial successive cyclic movement as a wh-hosting feature on *v*, namely the head that introduces the external argument. The presence of both an argument-introducing feature as well as a wh-hosting feature on *v* creates situations like (1). In the presence of two arguments, one of which is a wh-phrase, we expect the position of one to be regulated by the presence of the other *within* v*P* because one has a superset of the other's features. Assuming that the configuration of arguments within *v*P feeds agreement and case alignment, for example by making certain phrases closer to a higher agreement-inducing head, we expect the relative configuration of wh- vs. non-wh-arguments produced by (1) to have morphosyntactic consequences. I propose that this early choice about how to configure wh-specifiers of *v*P is

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the source of the intransitive-looking verbal morphology in Q'anjob'al subject extraction and explains other wh-movement/Voice interactions discussed in chapter 5.

A second advantage of this approach is that scenarios like (1) provide insight into the inventory of syntactic features. I propose that we only need a very sparse inventory of Merge-inducing features in order to characterize verb phrase syntax, in both wh- and non-wh-contexts—the rest is handled by the conditions on feature-checking. Some of this sparseness is due to the observation that c-selection treats DP and non-DP arguments (such as prepositional phrases, clauses, adjectival phrases, and so on) differently. I propose that this asymmetry points to a subset relationship between the Merge features that introduce different kinds of arguments. The fact that the syntax distinguishes DP vs. non-DP, but does not appear to distinguish PP vs. CP in the same way, suggests that non-DP arguments are all merged in response to a common feature, one that is sufficiently underspecified to permit checking by an element of any category. As a result, non-DPs check a subset of the features that DP arguments can, since DP arguments can also check features specified for DPs.

(4) Proposal:
[·*X*·] is an argument-introducing feature that can be checked by an element of any category.
Non-DP arguments can only merge in response to [·*X*·].
DPs can merge in response to [·*D*·] or [·*X*·].

Any time a verbal head selects for both a DP and a non-DP, the logic in (1) predicts their relative positions: DPs can be specifiers or complements, but non-DPs must be complements of the heads that select them.[1] In a first result, this restriction accounts for word order restrictions on DP and non-DP arguments, as in (5).

(5) Emily told (*to Megan) a story (to Megan).

We will see that this logic has significant consequences for the distribution of arguments, both in wh- and non-wh-contexts, and also the position of verbal heads relative to each other. Each of these cases may look superficially different, but they reflect the same underlying mechanisms. Features drive (all

1. Though non-DPs are typically base generated as complements, they may of course move to a higher specifier position if they are attracted by a higher probe, as in wh-questions or locative inversion (e.g., *To whom did you speak?*). The type and distribution of features in the verbal domain therefore mainly affect the underlying position of arguments rather than their surface positions, since the type and distribution of features *outside* of the verbal domain may be different, though locality principles make the former issue relevant to the latter.

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kinds of) Merge, and subset relationships between feature sets constrain structure through feeding/bleeding orders of operations. The number of syntactic features and kinds of verbal heads needed to predict the kinds of verb phrase structures that we find is very small, when we consider the logic in (1) in different contexts. The following is a brief outline of how these ideas are developed in each chapter.

In chapter 2, I outline a theory of feature-driven Merge, which draws extensively from prior literature, that captures the significance of subset-hood in clause construction. Aspects of this theory include a notion of simultaneous multiple feature-checking by a single element bearing multiple features, the possibility that unchecked features do not cause a crash, and a revised view of economy in syntactic derivation, which is much weaker than previous proposals. I propose one significant amendment to previous literature regarding the distribution of Merge features: while it is common to treat Merge features as properties of the lexical items that participate in Merge, I propose instead that Merge features are properties of syntactic categories. Lexical items therefore have access to Merge features according to their category, but the distribution of Merge features does not vary idiosyncratically across lexical items. This amendment is necessary to capture generalizations about verb phrases that transcend the individual properties of verbs that project them.

In chapter 3, I show that the theory generates two possible derivations for transitive subject questions, one of which should correspond to transitive morphosyntactic alignment and one that should correspond to intransitive morphosyntactic alignment. The source of this flexibility is the fact that *v* may host two kinds of operations: argument-Merge and wh-Merge. The order in which these two operations applies is in principle free, but it has consequences for which element becomes the highest specifier of *v*P (as well as how many specifiers *v* has), which in turn affects agreement outcomes. The availability of a second kind of derivation, which I propose leads to intransitive alignment, is proposed to explain why many Mayan languages' transitive subject questions require intransitive morphology. Thus, the theory introduces a previously unexplored avenue for parametric variation in transitive subject questions, which explains existing crosslinguistic variation between certain Mayan languages and, for example, English.

In chapter 4, I explore the distribution of arguments in non-wh-contexts. I propose that underspecified Merge features on certain heads both license non-DP arguments and constrain their distribution. Since underspecified features can be checked by any phrase, non-DP arguments necessarily check a subset of the features that any other phrase can, which leads to the following restriction: non-DPs must be *complements* of whatever head selects them. This causes any

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other selected elements in the verbal domain (e.g., DP, VP) to merge as specifiers in the context of a non-DP argument. When VP is a specifier, binding and locality conditions are affected: arguments of V and arguments of *v* do not c-command each other in this configuration. I propose that VP-specifier-hood is predicted in certain ditransitive constructions, which explains long-standing puzzles about the dative alternation.

Chapter 5 investigates how the structural restrictions uncovered in chapter 4 interact with A- and Ā-movement of different internal arguments. Here, two aspects of the theory interact: (1) complement-specifier asymmetries created by non-DP arguments, and (2) wh- vs. non-wh-specifiers of *v*P. What we find is that more internal arguments are accessible to A-movement than previously thought—either internal argument of a double object construction can raise to subject position in a passive due to a lack of c-command between them. However, apparent "dative intervention effects" may arise whenever the indirect object checks multiple features, such as when it is a wh-phrase or if it controls agreement/clitic doubling. In these special cases, I argue that derivational economy considerations enforce early movement/agreement with the indirect object, which accounts for apparent asymmetries in passives.

While most of the monograph focuses on the category features of arguments, chapter 6 addresses their thematic properties. The theory of feature-driven Merge advanced here predicts the position of arguments to be primarily regulated by category considerations, which leads to flexibility in the position of certain non-DP arguments (such as prepositional phrases). I show that this flexibility, while incompatible with a rigid thematic hierarchy, poses no problem for a compositional view of thematic role assignment. Thus, the presence of certain arguments can have variable effects on structure, as observed in chapters 3–5.

Chapters 3 and 5 both discuss the interaction between the distribution of wh-phrases and the resulting morphosyntactic alignment of the clause, otherwise known as wh-movement/Voice interactions. In both cases, I analyze interactions between wh-movement and Voice by reanalyzing the effects of wh-phrases on clause structure. Chapter 7 argues against alternative views of wh-movement/Voice interactions, which propose to explain these interactions by positing novel constraints on wh-movement from certain contexts. I suggest that these alternative views are unsuccessful due to their lack of crosslinguistic coverage. I also discuss a wider range of interactions between wh-movement and Voice and address whether and how this theory extends to those other cases.

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2 Merge Features and Structure-Building

Here I outline some assumptions about clause construction, most of which have been proposed elsewhere, that form the basis for the theory outlined in this monograph. I take as a starting point the proposal from Chomsky (1995) that Merge is the primary mode of structure-building, and moreover that all Merge is feature-driven. Merge features are found on terminal nodes, which may check their features by merging with other elements. In short, Merge features on elements assembled in a numeration instruct the derivation to build syntactic structures from those elements. Those structures are then sent to the interfaces for interpretation and pronunciation.

I also adopt Chomsky's (1995) proposal to treat Movement as a kind of Merge. On this view, there are (at least) two kinds of Merge that can build structure—external and internal Merge.[1] External Merge is an instance of Merge involving an element from the numeration or a separate workspace, while internal Merge is an instance of Merge involving a previously merged element. Following Müller (2010) and Longenbaugh (2019), I will abstract away from any potential differences between the features driving each kind of Merge (such as whether they have an agreement-inducing component) and assume that both internal and external Merge can be driven by the same kinds of features. I adopt the feature notation from Müller (2010), shown in (6b), for any kind of Merge. Replacing [α] with, for example, [D], [wh], [V], and so on, yields Merge features that drive structure-building of various kinds.

(6) Assumptions about Merge:
   a. All Merge (external Merge, A-movement, Ā-movement) is feature-driven (Chomsky 1995).
   b. [$\cdot\alpha\cdot$] = an instruction to Merge with an element bearing α.

1. I'll put aside adjunction, or Pair Merge, for the most part.

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This monograph will primarily discuss situations in which multiple Merge features co-occur on a head. It is well known that several functional heads in the clausal spine must necessarily have more than one structure-building feature—one for licensing their complement and another for hosting a specifier. Deciding which element gets to be the complement of such a head vs. which element gets to be its specifier amounts to deciding which feature to check first. Section 2.1 discusses conditions on the order of feature-checking.

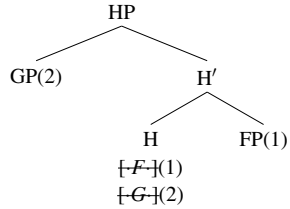
2.1 The Order of Operations

Suppose we have a head H with two Merge features [·*F*·] and [·*G*·]. I assume that the set of possible structures projected by that head is in part constrained by what other phrases are present in the numeration/workspace.

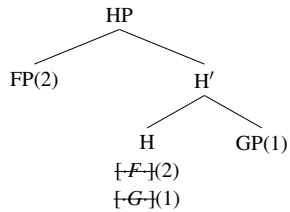
If there is both an element that bears [F] and another that bears [G], the resulting HP can have both a complement and a specifier. Unless we impose constraints on the order of feature-checking, the syntax should be able to generate either structure in (7). Additionally, whether both structures in (7) are realized may depend on whether the interfaces care about the complement/specifier distinction, for example, by imposing a particular order of interpretation.

(7) H checks F and G with separate instances of Merge

a. H checks F before G → F is a complement



b. H checks G before F → G is a complement



If there is a phrase that bears *both* [F] and [G], however, I follow Chomsky (1995), Pesetsky and Torrego (2001), Rezac (2013), and van Urk and Richards

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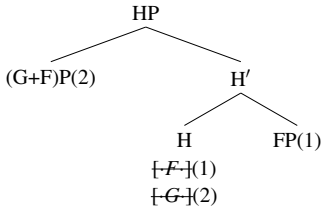
(2015) in assuming that this element can check both features on H simultaneously. In fact, if it merges at a time when both features are unchecked, it *must* check both features according to (8)—it cannot selectively check one feature but not the other.[2] As such, if H is to have both a complement and a specifier, the element bearing both [F] and [G] must be the specifier. If it merged first as H's complement, it would have checked both features and blocked a second element from forming a specifier.

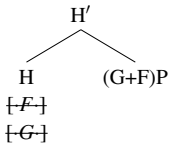
(8) Feature Maximality/Multitasking/Free Rider condition: Given a head H with features $[F_1]...[F_n]$, if XP discharges $[F_i]$, XP must also discharge each $[F_j]$ that it is capable of (Chomsky 1995; Pesetsky and Torrego 2001; Rezac 2013; van Urk and Richards 2015; Longenbaugh 2019).

(9) H checks its features with either one or two instances of Merge

a. H checks $[\cdot F \cdot]$ against FP first → $[\cdot G \cdot]$ can license (G+F)P second



b. (G+F)P checks both $[\cdot F \cdot]$ and $[\cdot G \cdot]$ first → FP cannot merge



As long as a single element is permitted to check multiple features, we see that subset relations between feature sets impose an implicit constraint on structures containing multiple phrases. The more specified element has an asymmetric ability to block the less specified element from certain positions. The only way for both to be licensed by the same head is for them to merge in a particular order. This structural restriction is prior to any possible lexical requirements imposed by the head in question, such as the order in which to

2. The formulation in (8) is due to Longenbaugh (2019). Longenbaugh, however, proposes a constraint on Feature Maximality so that an element can only check a maximum of one *Merge* feature at a time, but may jointly check an Agree feature and a Merge feature, for example. I do not adopt this view—I propose instead that Feature Maximality can enforce multiple checking of Merge features.

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interpret arguments. As such, we expect to find the effects of this kind of ordering requirement across structures in general, rather than just in the context of particular lexical items.

Though the assumption in (8) is often adopted, the conclusion that it forms the basis of restrictions on the order of operations is controversial. For example, Müller (2010) argues that the lexicon specifies the order of feature-checking, where the required order of feature-checking for a given head reflects functional or thematic hierarchies.[3] For example, a head that c-selects three arguments, such as a PP and two DPs, might have the order of Merge in (10b), which reflects the theta grid in (10a). On theories where thematic role-assignment is split across multiple heads, the order of feature-checking for each head might be that in (11b), where the order of feature-checking reflects not only the theta grid but the functional hierarchy as well: *v* c-commands VP.

(10) A ditransitive verb (if we followed Müller)
   a. θ-roles
      $\theta_1 >> \theta_2 >> \theta_3$ (Agent >> Theme >> Goal)
   b. Subcategorization features
      $[\cdot P \cdot]_3 > [\cdot D \cdot]_2 > [\cdot D \cdot]_1$

(11) Müller's proposal modified to contain multiple verbal heads
   a. θ-roles
      $\theta_1 >> \theta_2 >> \theta_3$ (Agent >> Theme >> Goal)
   b. Subcategorization features
      V: $[\cdot P \cdot]_3 > [\cdot D \cdot]_2$
      v: $[\cdot D \cdot]_1 > [\cdot V \cdot]$

If the syntax places an independent constraint on the order of feature-checking, however, specifically in the presence of elements that can check multiple features, this restriction should filter out some of the logically possible lexical items in certain contexts. In other words, a head that has a requirement for checking $[\cdot G \cdot]$ before $[\cdot F \cdot]$ should not be satisfiable by an α_{G+F} and an α_F, even if it is generally satisfiable by an α_G and an α_F. Depending on how widespread situations like (9) are, we might even expect certain structures to be ruled out across the board, ruling out whole classes of possible lexical entries with unsatisfiable feature-checking requirements. If so, we might not need to encode a unique order of feature-checking for every lexical item—the

3. His proposal is a minimalism-friendly version of proposals that he attributes to Categorial Grammar and earlier transformational and phrase structure grammars (Lewis 1972; Pollard and Sag 1994; Wunderlich 1997; Lechner 2004; Kobele 2006, 2009).

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orders of feature-checking that we find would follow from general conditions on structure-building.

In this monograph, I adopt the strongest hypothesis, which is that the order of operations is *only* subject to general syntactic conditions and not subject to idiosyncratic lexical requirements on feature-checking (building on insights from Longenbaugh [2019]). On this view, the lexicon may only impose indirect constraints on syntactic structure, for example by filtering out uninterpretable and unpronounceable structures.[4]

Besides the implicit constraints on feature-checking imposed by Feature Maximality, I propose that the order of operations is additionally governed by economy considerations, following especially Pesetsky and Torrego (2001) and van Urk and Richards (2015), among others. However, I propose that the conditions found in those works, (12) and (13), are too strong and therefore require the modification in (14).

(12) Economy Condition (Pesetsky and Torrego 2001)
A head H triggers the minimum number of operations necessary to satisfy the properties (including EPP) of its uninterpretable features.

(13) Multitasking (van Urk and Richards 2015)
At every step in a derivation, if two operations A and B are possible, and the features checked by A are a superset of those checked by B, the grammar prefers A.

(14) Weak Economy
At every step in a derivation, if two operations A and B are possible, and A checks more features than B, the grammar prefers A, *unless* doing A bleeds B. In the latter case, the grammar optionally allows A or B.

The reason for the proposed modification in (14) is as follows: (12) and (13) were formulated to describe situations where only *internal* Merge applies, to prevent more instances of movement from targeting a position when fewer instances of movement could have satisfied all of the features. If allowed to apply to positions where *external* Merge takes place, we end up predicting that the syntax can enforce derivations where certain elements aren't allowed to Merge at all. In other words, we would predict derivations like (9a), repeated below, to never be possible because (9b) checks the same features in fewer operations.

4. This picture of the order of operations is more in keeping with Adger (2003), except Adger proposes that the syntactic conditions on the order of operations are related to the thematic hierarchy rather than logical relationships between feature sets.

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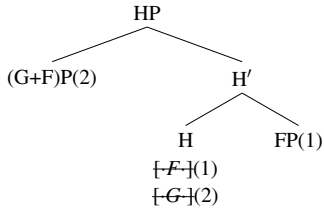
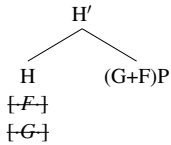
(9) H checks [·F·] and [·G·] with either one or two instances of Merge

a. H checks [·F·] against FP first → [·G·] can license (G+F)P second



b. (G+F)P checks both [·F·] and [·G·] first → FP cannot merge



I will demonstrate that this is not the case. While we will indeed find the positions of less specified elements to be restricted by the presence of more specified ones, we do not find a total lack of less specified elements in these contexts, suggesting that economy does not enforce derivation (9b). However, there will be other contexts where subset relations between feature sets are not at play, where we find that multiple feature-checking is preferred, hence the condition in (14).

In sum, I propose that the order of operations is free in most contexts (Longenbaugh 2019) unless two operations are possible that check nonoverlapping feature sets, and one checks more features than the other. When there is a subset relationship between elements, constraints on structure emerge without explicit constraints on derivation. In other words, subset relationships between feature sets impose constraints on structure by allowing one element to restrict the distribution of another—economy explicitly orders feature-checking in some contexts where no bleeding is possible.

2.2 Merge Features and Feature Failure

I have argued that we should not allow the lexicon to prespecify the order of syntactic operations, but rather that the order of operations follows from general conditions on feature-checking. These conditions are quite weak, in some cases allowing multiple orders of operations to stem from a single numeration so long as Weak Economy is satisfied.

In a similar vein, Preminger (2014) and Longenbaugh (2019) suggest that the syntax doesn't enforce feature-checking at all in certain contexts. For example,

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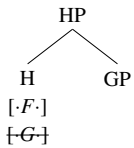
suppose a head with two Merge features only checks one of them in the course of a derivation, because an element that could check the second feature simply is not present in the numeration/workspace. That structure might be interpretable or uninterpretable depending on the meaning of the head and how many arguments it s-selects. The question is: Should the mere presence of an unchecked feature prevent the structure from ever being sent to the interfaces, as proposed by Chomsky (1995), or should the interfaces determine whether the structure is viable?

Preminger (2014) and Longenbaugh (2019) argue that there should be no penalty for unchecked features in general—the interfaces will still attempt to assign an interpretation and pronunciation to the resulting structure regardless of how many features have been checked.[5] As a result, structures like (16) could be generated if no other element is present that can check H's second feature. Whether such structures are actually realized depends on the meanings of the elements involved and whether the structure violates any interface-specific output filters.

(15) *Feature Failure*:
If no element is present that may check a Merge feature $[\cdot F \cdot]$, $[\cdot F \cdot]$ may unproblematically fail without crashing the derivation (Preminger 2014; Longenbaugh 2019).

(16) An unchecked $[\cdot F \cdot]$ does not prevent HP from being sent to the interfaces



It is important to note that I have placed no constraints on what factors the interfaces might use to filter out a structure—the claims made here are solely about conditions on feature-checking in the syntax proper. From that perspective, it is conceivable that a language might have an output filter that makes reference to the presence of certain kinds of unchecked features. If this were true, it would still be a general fact about the combinatorial system that unchecked features are in principle permitted, though they may ultimately

5. For Preminger, it is important that the syntax *try* to discharge its features—features may go unchecked *only if there is no element accessible for a given feature-checking operation*. Feature-checking therefore only fails if the numeration simply does not supply the right kinds of elements to check those features, or if checking them would violate other principles of the grammar, such as locality conditions on movement.

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cause problems at the interfaces in certain languages or contexts. Whether output filters ever reference unchecked features is hard to diagnose, however, since structures like (16) could be permitted or ruled out on independent grounds, such as the theta criterion, s-selection, l-selection, prosodic restrictions, linearization, and so on. In general, I will assume that the interfaces are insensitive to the presence of unchecked features, appealing to other aspects of the interpretive system to filter out unattested structures, though later work may prove otherwise. For now, I defer discussion of the interpretive component of grammar until section 2.5, which introduces the broader discussion covered in chapter 6.

The proposal to allow Merge features to go unchecked reduces the number of distinct feature bundles we need to have in the lexicon. For example, phase heads are typically assumed to be present in clauses whether or not wh-movement applies. Assuming that wh-movement is a response to a feature on a phase head, that feature either must not be present or must go unsatisfied whenever there are no wh-expressions in the clause. If unsatisfied features were a problem for the grammar, we would need to posit different feature bundles for phase heads in non-wh-contexts compared to phase heads in wh-contexts. If features can unproblematically go unchecked, phase heads can always be endowed with a wh-feature, which is only utilized in the presence of wh-elements.

Feature failure makes it possible to reduce the number of distinct feature bundles in the lexicon, not just for phase heads but in the domain of argument-introduction as well. It is well known that a single verb can select for different numbers and types of arguments in different contexts. For example, the verb *tell* can host either one or two internal arguments of varying categories. A recurring question for the field has to do with whether the lexicon needs multiple entries for the verb *tell* in order to account for such behavior.

(17) a. Sue told a lie. (*Tell* selects a DP.)
b. Sue told Sally about Bill's love of carrots. (*Tell* selects a DP and a PP.)
c. Sue told Sally that Bill like carrots. (*Tell* selects a DP and a CP.)

At least from the perspective of syntax, if features are allowed to fail, the same feature bundle for *tell* is in principle compatible with all of the clauses in (17). We could assign *tell* three features, one checkable by DPs, one checkable by PPs, and the other checkable by CPs. In the absence of a CP, the C feature may simply go unchecked, resulting in sentences like (17a,b), and so on. On this view, how the phrases checking these features might be interpreted in different

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contexts is a matter for the semantics—the syntactic component of the lexical entry for *tell*, however, might always be the same.[6]

At this point, I have adopted two proposals, both of which have been previously motivated, which eliminate two parameters of variation for lexical items: (1) they cannot specify different orders of operations, and (2) they need not specify different syntactic feature bundles for different structural contexts. I propose to strengthen this second hypothesis to bring it more in line with the first one. If we don't need different feature bundles to distinguish the *tell* in (17a) from the *tell* in (17b,c), we probably don't need different syntactic feature bundles to distinguish any verb from any other verb—perhaps the syntactic category V has the same set of features across all contexts, regardless of which particular lexical verb occupies its position. These features represent the maximum capacity for a VP, since its features may simply go unchecked to produce VPs with fewer arguments. Different lexical verbs may appear or not appear in different contexts depending on their meanings.[7]

(18) *Categorial Merge Hypothesis*:
Merge features are assigned to syntactic categories rather than individual lexical items.

In sum, I suggest that the distribution of Merge features, like the conditions on the order of operations, is not subject to lexical variation. Instead I propose that Merge features are properties of syntactic categories. A category V is endowed with a set of Merge features that every verb has access to; a category *v* likewise has an invariant set of features across all contexts, and so forth. The reason that these invariant sets of features can produce a range of different structures is because (1) different orders of operations may be possible from a single starting point, and (2) not every feature needs to be utilized in the course of every derivation.

(19) Summary of assumptions/proposals about Merge features:
a. They can be checked by any kind of Merge.

6. The present description is not meant to be a serious proposal about *tell* but is rather meant to illustrate the effects of feature failure on theories of selection. Later I will modify the proposed set of features for verbs like *tell*. See especially Levin and Rappaport Hovav (2005b) and Borer (2005) for an overview of arguments and literature that addresses the source of flexibility in verbs' selectional requirements, paying due diligence to the semantics.

7. This proposal takes inspiration from Merchant (2019), who proposes that roots don't possess c-selectional features—the categories that they combine with do. The present theory is an extension of this view by claiming that the distribution of Merge features more generally is predetermined by syntactic category.

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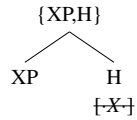
b. They can be multiply checked by an element bearing multiple features.
   Feature Maximality: In fact they must be multiply checked if something merges that can check multiple features.
c. They can go unchecked without crashing the derivation.
d. The order of operations is only constrained by Weak Economy.
e. They are assigned at the level of the category, not to specific lexical items.

In the following chapters, I propose a set of features on heads that, combined with the assumptions made in this chapter, make some interesting predictions about clause structure in different contexts. Crucially, all Merge features stand on an equal footing regarding when and how they are to be checked—wh-movement, A-movement, and external Merge all apply in response to the same kinds of features and under the same conditions. As such, the presence or absence of wh-elements has the same capacity to affect basic clause structure as the presence or absence of arguments. As we will see, when a wh-expression is also an argument, it may check multiple features at a time, leading to surprising positional requirements for other elements in the clause, which may have morphosyntactic effects.

2.3 A Note on Agree

Sections 2.1 and 2.2 outlined a theory of conditions on Merge, which were proposed to influence what kinds of syntactic structures may be built. On the present view, one of the ways that conditions on Merge constrain derivation is by affecting the possible orders of feature-checking. However, Merge features are not the only possible features involved in a derivation—Agree may also apply, induced by an unvalued feature (a probe) that searches for an element that can value it. Agree features, unlike Merge features, are not satisfied under sisterhood but can operate *at a distance* to target elements in the c-command domain of the probe (Chomsky 2000, 2001).

(20) MERGE(XP,H) = {XP,H}



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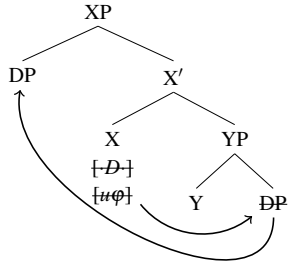
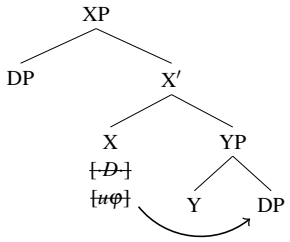
(21) AGREE: An Agree feature is an unvalued feature (a probe) that searches its c-command domain for something bearing a value for that feature, and it copies the value of that feature back to the probe.
   a. There seem(*s)$_{u\varphi}$ to have arrived only two guests.

Following Longenbaugh (2019), the distribution of probes may affect the order of operations in the same way that the distribution of Merge features does. Heads that can control multiple operations, such as Merge and Agree, will discharge those operations in ways consistent with the proposals in (19). For example, if a head has both a Merge feature specified for DPs and a φ-probe, both features may either be simultaneously satisfied by a single element, as in (22), or by separate elements, as in (23).

(22) $[\cdot D \cdot]$ and $[u\varphi]$ satisfied by the same element



(23) $[\cdot D \cdot]$ and $[u\varphi]$ satisfied by different elements



Similar to the logic discussed in section 2.1, not every imaginable order of feature-checking/valuation is compatible with both (22) and (23). If Agree applies first, Feature Maximality requires the goal DP to check as many features as it can; since it can also check the $[\cdot D \cdot]$ feature via movement, the goal must remerge in Spec XP to check every feature, resulting in (22) and blocking (23). By contrast, if $[\cdot D \cdot]$ is first checked by external Merge before Agree applies, the merged DP may check $[\cdot D \cdot]$ but cannot value $[u\varphi]$, which must subsequently

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search elsewhere for a goal, resulting in (23) and blocking (22). The interaction between Merge and Agree is therefore another instance of subset relations between feature sets constraining the order of operations. The element that can satisfy more features must be targeted second in the presence of an element that satisfies a subset of them.

Though this monograph is not principally about Agree, we will see that the distribution of φ-probes in some languages will play a role in the derivation according to the above logic. Important to note is that I will only posit φ-probes in contexts where overt φ-agreement is observed. As I alluded to earlier, some theories of movement posit abstract probes on certain kinds of Merge features, even where no overt agreement is observed. If such abstract probes exist, I assume they are not separate from the Merge features licensing movement, and thus do not affect the feature logic described here.

2.4 The Plausibility of Multiple Feature-Checking

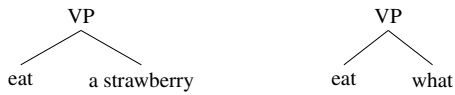
This section addresses the question: What kinds of elements can check multiple features? Following van Urk and Richards (2015), I propose that wh-arguments are an example of something that can check two kinds of features: features specified for arguments and features that license wh-movement.

It is well known that the distribution of arguments often differs from the distribution of wh-phrases in a clause. For example, in English, non-wh-direct objects surface as complements of the verb (24a), while wh-direct objects surface at the left edge of the clause (24b).

(24) a. Emily ate **a strawberry**.
b. **What** did Emily eat?

However, we typically assume that the wh-phrase in (24b) has something in common with the direct object in (24a), namely that they are both DPs that externally merged into the clause as sisters to V. The reason they have different surface positions is because the wh-phrase in (24b) has an additional property, that of being a wh-phrase, which makes it the target of an additional process besides argument-Merge, namely wh-movement, which brings it to the edge of the clause. In other words, the direct object in (24b) has a superset of the properties that the direct object in (24a) has.

(25) (24a) and (24b) start out the same



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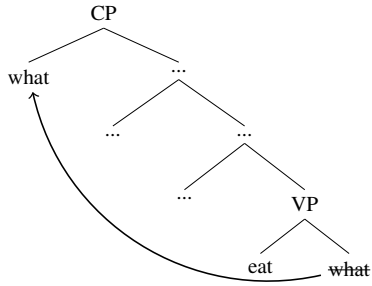
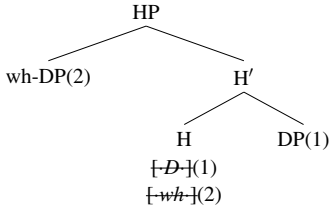
(26) The object in (24b) later undergoes wh-movement



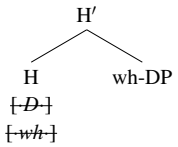
Based on the logic of feature-checking established in the previous sections, if there were a head in the clause that could control *both* argument-Merge *and* wh-movement, the presence of any wh-arguments in the numeration/clause should affect when another argument can merge there. As shown in (27), merging a wh-argument first in that position blocks another argument from merging there, while merging it second permits another argument to merge as well.

(27) H checks [·*D*·] and [·*wh*·] with either one or two instances of Merge:

a. H checks [·*D*·] against DP first → [·*wh*·] can license wh-DP second



b. Wh-DP checks both [·*D*·] and [·*wh*·] first → DP cannot merge



Note that Cable (2010) argues against this treatment, proposing that wh-elements only have the syntactic property of being a wh-phrase, not a DP. He proposes that s-selection makes it possible for wh-phrases to merge in argument positions, even if they don't have the syntactic features of a typical argument. On that view, we would not expect the presence of wh-elements to ever have much effect on the timing of argument-Merge because wh-arguments and other arguments check nonoverlapping features. I argue against this treatment, based

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in part on the observation that wh-arguments can undergo A-movement, as in passive and unaccusative questions.

(28) Wh-phrases can raise to subject position
   a. Who left?
   b. What was eaten by Emily?

Assuming that A-movement is not motivated by s-selection, the wh-phrases in (28) must have some feature that makes them suitable targets for raising to subject position. I propose that feature is [D], given the fact that non-DPs don't participate in the passive alternation (*Sue was laughed at* vs. **At Sue was laughed*). Some positions in the clause have a requirement for a DP specifier, represented as [·*D*·], even though they don't assign a theta role to it. Whatever moves to that position must therefore be able to satisfy a [·*D*·] feature. If the moving element can also move on to Spec CP to check a [·*wh*·] feature, it must have both [D] and [wh] features.

Taking for granted that wh-arguments have two features, are there any syntactic positions that have both [·*D*·] and [·*wh*·] [which would yield situations like (27)]? Following especially Longenbaugh (2019), who proposes this feature bundle for *v* explicitly, but many others as well, I propose that *v* is such a head that has both [·*D*·] and [·*wh*·]. Assuming that *v* is the head that introduces the external argument, it must have a [·*D*·] feature. According to Chomsky (1986), and subsequent work, *v* is also a host of successive cyclic wh-movement, and must therefore bear a [·*wh*·] feature. As illustrated in (27), these features may in principle be checked in either one or two instances of Merge, depending on whether a wh-argument is present and the time at which it merges. Chapter 3 shows how these two features on *v* interact to predict crosslinguistic variation in the morphosyntax of subject wh-questions.

Another way in which a single element could check multiple features is if the features on a head stand in an entailment relationship. Suppose the world were such that every YP is a kind of ZP, but not every ZP is a YP, and there were a head with features [·*Y*·] and [·*Z*·]. If the head first merges with a YP (which has the stronger feature), it should check both [·*Y*·] and [·*Z*·] simultaneously and block another instance of Merge (29b), analogous to the behavior of wh-arguments in (27). If instead a ZP merges first, it should only check [·*Z*·], allowing a YP to merge second (29a).

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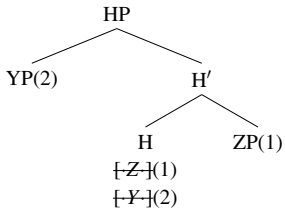
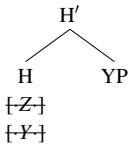
(29) Assume Y→Z; H checks [·*Y*·] and [·*Z*·] with either one or two instances of Merge:

a. H checks [·*Z*·] against ZP first → [·*Y*·] can license YP second



b. YP checks both [·*Z*·] and [·*Y*·] first → ZP cannot merge



In the literature on Agree, several proposals leverage the logic in (29) to explain situations where φ-probes appear to violate normal locality conditions. Béjar and Rezac (2009), for example, discuss a pattern in Basque in which the agreement marker that appears as a prefix on the verb can agree with the subject of the clause, only if the object is not a participant. Bejar and Rezac argue that this is because the agreement-controlling head probes the internal argument before the external argument, and participants have a superset of the φ-features that third-person elements do. In their words, "The IA values the probe as much as it can, and the EA ends up controlling only if it can add to the value contributed by the IA."

(30) Basque (ex. 2, p. 187)

a. ikusi z-in-t-u-da-n
seen 2-x-PL-have-1-PST
'I saw you.'

b. ikusi n-ind-u-en
seen 1-x-have-PST
'He saw me.'

c. ikusi n-ind-u-zu-n
seen 1-x-have-2-PST
'You saw me.'

d. ikusi n-u-en
seen 1-have-PST
'I saw him.'

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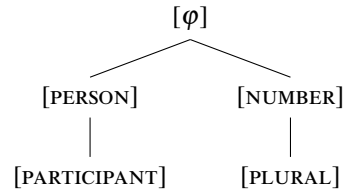
Bejar and Rezac adopt a version of the φ-feature geometry proposed by Harley and Ritter (2002), which establishes the desired entailment relationship between third-person and participant features. On their view, third-person elements have an unmarked person feature (labeled [π]), while participants have a marked person feature, namely a participant feature. They represent this entailment relationship as a subset relationship by assigning every element an unmarked person feature. Participants therefore have a superset of the features that third-person elements have, which creates a one-way entailment relationship between them—all participants have person features, but not all elements with person features are participants.

(31) A simplified φ-feature geometry from Harley and Ritter (2002) for Basque



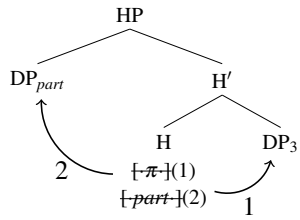
(32)

3rd person	[π]
1st/2nd person	[π] [PART]

Bejar and Rezac propose that Basque shows the pattern in (30) because it has a person probe with two features, [π] and [PART]. If the probe first finds a participant goal, the participant will satisfy both features, preventing the probe from searching further. If the first goal is third-person instead, it will only value [π], causing the probe to look further for [PART].

(33) H satisfies [$\cdot\pi\cdot$] and [$\cdot$*part*$\cdot$] with either one or two instances of Agree

a. H satisfies [$\cdot\pi\cdot$] by probing DP_3 first → [$\cdot$*part*$\cdot$] probes again for DP_{part}



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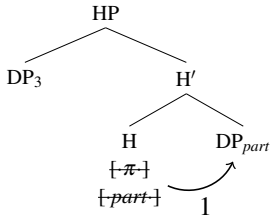
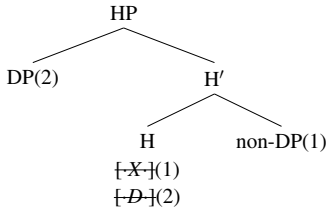
b. DP_{part} satisfies both $[\cdot\pi\cdot]$ and $[\cdot part\cdot]$ first → DP_3 is never probed



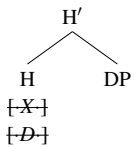
This logic need not be limited to φ-probes, but it can be extended to Merge as well to yield patterns like (29). For example, an entailment relationship like this in the domain of Merge could arise if a head had two features, one of which can only be checked by DPs and another that is *unspecified* for category. The unspecified feature can in principle be checked by anything, but $[\cdot D\cdot]$ can only be checked by DPs. If both a DP and non-DP must merge with such a head, the non-DP had better merge first because the DP checks a superset of its features, as in (34). Chomsky (2005) makes use of such unspecified features to describe heads that require some kind of specifier without caring about its category, calling them *unspecified edge features*. Here, I extend the logic of these features to the domain of clause-construction more generally, not just at the clause edge. Chapter 4 discusses how the distribution of unspecified features impacts verb phrase syntax and explains puzzling facts about ditransitive clauses.

(34) Assume $[\cdot X\cdot]$ can be checked by an element of any category; H checks $[\cdot D\cdot]$ and $[\cdot X\cdot]$ with either one or two instances of Merge

a. H checks $[\cdot X\cdot]$ against a non-DP first → $[\cdot D\cdot]$ can license a DP second



b. DP checks both $[\cdot X\cdot]$ and $[\cdot D\cdot]$ first → non-DP cannot merge



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2.5 A Note on Thematic Roles

In this chapter, I have motivated a set of conditions on feature-checking, which, when combined with an inventory of features and categories, should produce a space of possible syntactic structures. The space of possible syntactic structures should be universal in the sense that the architecture used to generate it makes no reference to actual lexical items. This raises a familiar question, namely how do lexical items get mapped to the right kinds of structures? In other words, how does a verb like *devour* come to occur in a different structure than a verb like *laugh*, if the conditions on structure-building don't reference the lexicon?

(35) *Devour* vs. *Laugh*
   a. Megan devoured *(the strawberry).
   b. Emily laughed (*Megan).

As foreshadowed earlier, I assume that the interpretive system is responsible for explaining the behaviors of different verbs. More concretely, I assume that *devour* has a lexical/semantic requirement to discharge a theta role, while *laugh* does not. Inserting *devour* into a structure with no direct object will result in a crash at the interfaces because *devour*'s needs are not met. Likewise, inserting *laugh* into a structure with a direct object will face the opposite problem—*laugh* has no way to interpret an object, and so the semantics will not produce an output.

This kind of a view raises many questions, which chapter 6 will cover in more detail. Perhaps the most pressing one is: If theta roles are properties of the lexicon, why do they map to regular positions in syntactic structure? Much formative literature on the syntax-semantics interface observes that theta roles are assigned to arguments in a systematic fashion, with agent roles assigned to structurally higher arguments and patient roles assigned to structurally lower arguments, according to a thematic hierarchy (Fillmore 1968; R. Jackendoff 1972; M. Baker 1988; J. Grimshaw 1990; and Valin 1990, among many others).

That said, Rappaport Hovav and Levin (2015), citing observations from M. C. Baker (1996) and Newmeyer (2002), note that the content of the thematic hierarchy is controversial. While most versions of the thematic hierarchy agree that agents are structurally more prominant than patients, there is disagreement about the relative ranking of other thematic roles relative to patients and themes, as indicated in two opposing examples in (36).

(36) Some conflicting thematic hierarchies
   a. R. Jackendoff (1972): Agent > Goal/Source/Location > Theme.
   b. M. C. Baker (1989): Agent > Theme/Patient > Goal/Location.

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In this monograph, I will argue that some version of the thematic hierarchy can be upheld but that it is in fact much less rigid than previous work suggests, explaining why it has been so difficult to uncover the relative rankings of certain thematic roles. We will see evidence from binding and movement that some roles may occur in multiple positions, indicating that there is indeed flexibility in the mapping between theta role and syntactic structure. The present view of the interpretive system is equipped to handle such flexibility, while theories with a rigid thematic hierarchy are not.

A picture emerges in which arguments are assigned thematic roles by the heads that introduce them, as on many approaches that take up a neo-Davidsonian syntax. Some heads have a fixed position relative to each other according to the functional hierarchy, which causes their arguments to have different heights in the clause—this is the proposed source of the thematic hierarchy. However, I will propose that the functional hierarchy is not very rich, leaving the position of certain other heads (especially prepositions) unspecified. As a result, the thematic roles assigned by heads not selected in the functional hierarchy are more flexibly mapped to structure.

2.6 Summary

In this monograph, we will discuss how entailment relationships between feature sets affect clause structure in a variety of ways, due to the properties of Merge summarized in (19), repeated next. We will investigate two kinds of entailment relationships in particular: (1) DP vs. wh-DP, where wh-DPs have a superset of the features that DPs have, and (2) DP vs. non-DP, where DPs can check a superset of the features that non-DPs can.

(19) Summary of assumptions/proposals about Merge features:
   a. They can be checked by any kind of Merge.
   b. They can be multiply checked by an element bearing multiple features.
      Feature Maximality: In fact they must be multiply checked if something merges that can check multiple features.
   c. They can go unchecked without crashing the derivation.
   d. The order of operations is only constrained by Weak Economy:
      At every step in a derivation, if two operations A and B are possible, and A checks more features than B, the grammar prefers A, *unless* doing A bleeds B. In the latter case, the grammar optionally allows A or B.

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e. They are assigned at the level of the category, not to specific lexical items.

(37) Feature bundles in entailment relationships

a. wh-DP → DP
(wh-DP checks [·*D*·] and [·*wh*·]; DP only checks [·*D*·]).

b. DP → non-DP
(DP checks [·*D*·] and [·*X*·]; non-DP only checks [·*X*·]).

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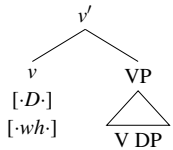
3 Subjects and Wh-Movement

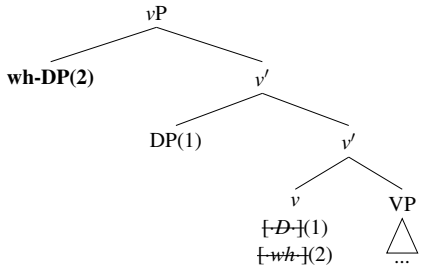
In this chapter, we investigate the duality of *v* in the context of the theory of Merge outlined in chapter 2 and see what the theory predicts for clauses in which the external argument wh-moves. As proposed in chapter 2, *v*P is the locus of at least two kinds of Merge: external argument-Merge and wh-movement. These two functions can be represented by the features in (38).

(38) *v* can minimally host a DP specifier and a wh-marked specifier.



DPs that are wh-phrases have the special property of being able to check either/both features. They are therefore predicted to be able to merge in Spec *v*P, even if another DP has already merged there. If they merge too early, they are also expected to block another element from merging in Spec *v*P, since they will check both features.

(39) If a DP merges before a wh-DP merges → *v* has two specifiers



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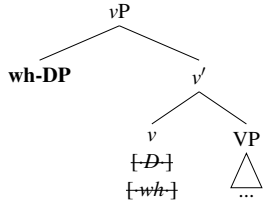
(40) If a wh-DP merges first, it satisfies both features → *v* has one specifier



The above structural restriction on DPs in the context of wh-DPs is expected to hold across all contexts, regardless of the thematic roles assigned to each of these elements. Interface conditions may add further restrictions to how trees like (39) and (40) may be pronounced and interpreted, but they may not provide new structures besides the *v*Ps in (39) and (40). For example, an internal argument could in principle be the wh-phrase in either (39) or (40). However, if the internal argument checks both features in (40), the result must be an intransitive clause rather than a transitive one, since the feature that would have licensed an external argument has instead been checked by an internal argument.

(41) a. If wh-DP in (39) is an internal argument → transitive clause.
b. If wh-DP in (40) is an internal argument → intransitive clause; subject can't Merge.

Interestingly, no such restriction arises if the wh-phrase is the *external* argument. External arguments that are wh-phrases can be the only specifier of *v*P, as in (40), or they may be the second specifier of *v*P if [·*D*·] was checked first by an internally merged internal argument. Either structure in (39) or (40) should be interpretable as having both an external and an internal argument.

(42) a. If wh-DP in (39) is an external argument → transitive clause.
b. If wh-DP in (40) is an external argument → transitive clause.

In sum, the theory predicts different numbers of structures to be available for transitive subject vs. transitive object wh-questions. When an internal argument wh-moves, there is only one structure available that is compatible with the clause having an external argument. When an external argument wh-moves, two structures are available with the same options for interpretation.

There is a problem with the tree in (39), however. In (39), the wh-expression is the outer specifier of *v*P. Assuming that wh-DPs can control agreement, we therefore predict that object wh-questions should bleed agreement with the subject due to Relativized Minimality. This is not what we find—wh-movement of an object does not typically bleed agreement with the transitive subject.

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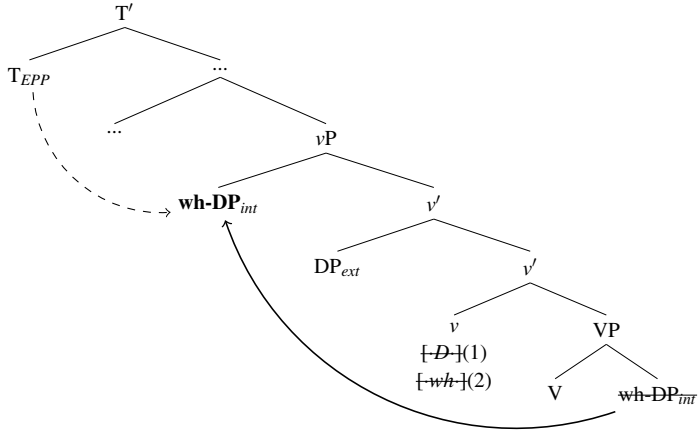
(43) If object wh-phrases move to an outer specifier position, they should be the highest available φ-goal that can satisfy T's EPP property



(44) a. Prediction: What **does/*do** I like?
b. Reality: What **do/*does** I like?

This problem could be avoided in a nominative-accusative language like English by supposing that subject agreement discriminates against accusative case. An accusative wh-object cannot control agreement, so the probe skips the object and targets the subject instead. However, this proposal won't help in an ergative-absolutive language—since absolutive is the unmarked case in an ergative case system, the object should bleed subject agreement in a derivation like (43). This is not what we find, however. Many ergative languages' object wh-questions permit agreement with the ergative subject, as shown in the West Greenlandic example in (45).

(45) Su-tu-ssa-visi?
what.ABS-eat/drink-FUT-2PL.INTER
'What will you have to drink?' *West Greenlandic* (Fortescue 1984, p. 23).

The present order of specifiers therefore makes the wrong predictions about the relationship between the order of Merge and the observed morphosyntax. Following Richards (1997), however, the order of multiple specifiers might not cyclically reflect the order of Merge. He argues that successive specifiers *tuck in* under previously formed specifiers so that new specifiers are always closer to the head licensing them than previous ones. Richards's proposal was made

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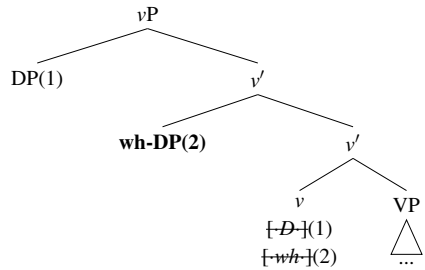
specifically in connection to multiple movements in response to the *same* feature. However, I take up the extension in (46) from Paillé (2021), which forces tucking in even when different specifiers check different features.

(46) **Generalized tucking in** (Paillé 2021, generalizing from Richards [1997]):
Specifiers merge as close to the head licensing them as they can, so that each successive specifier tucks in under previously merged specifiers.

With the condition in (46), the tree in (39) becomes the tree in (47). This has two consequences, one clearly desirable and the other surprising. The desirable outcome is that object wh-expressions are no longer predicted to ever bleed subject agreement. If an external argument is merged before an object is wh-moved, the object wh-moves to a lower position, so the external argument is still the highest accessible nominal for future agreement+A-movement .

(47) A second-merged wh-DP necessarily becomes the *inner* specifier



The surprising prediction is that external arguments that are wh-phrases are now compatible with two different agreement alignments: one where the external argument controls subject agreement (48) and one where the internal argument controls subject agreement (49). This second outcome is possible because the wh-subject can be licensed by [·*wh*·] instead of [·*D*·], which means [·*D*·] is available to license A-movement of the object instead. Due to tucking in, this second order of operations makes the internal argument the outer specifier , which should affect agreement outcomes.

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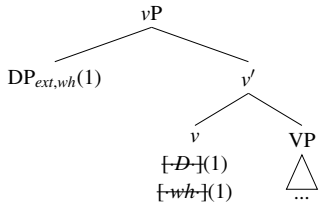
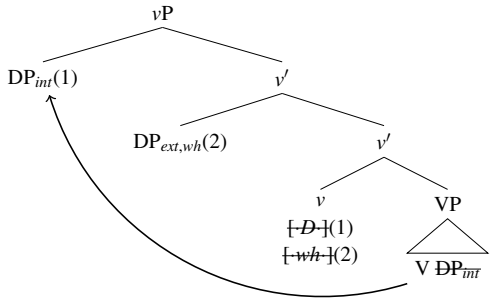
(48) Option 1 for subject wh-questions: Check both [·*D*·] and [·*wh*·] with the transitive subject



(49) Option 2 for subject wh-questions: [·*D*·] is checked by the object first, and the subject is licensed by [·*wh*·]



While (49) may look odd, there are, in fact, many languages that exhibit unusual verbal morphology when a transitive subject is wh-moved. Many Mayan languages, for example, have a special Voice morpheme for these cases, which triggers intransitive-looking verbal morphology. The pattern of interest is demonstrated in (50), (51), and (52). In (50), observe that Q'anjob'al transitive clauses typically exhibit both subject agreement (glossed A) and object agreement (glossed B). Object wh-questions, as in (51), preserve this agreement alignment (note: 3sg object agreement is always null). Subject wh-questions do not, however, as evidenced by the lack of subject agreement in (52).

(50) Max-ach y-il-a'.
PFV-B2SG A3SG-see-TV
"She saw you." (Q'anjob'al Coon, Pedro, and Preminger 2014, ex. 12a, p. 187)

(51) Maktxel max y-il[-a'] naq winaq?
who PFV A3SG-see-TV CLF man
"Who did the man see?" (Q'anjob'al ex. 21b, p. 192)

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(52) Maktxel max-ach il-**on**-i?
who PFV-B2SG see-AF-ITV
"Who saw you?" (Q'anjob'al Coon, Pedro, and Preminger 2014, ex. 1, p. 180)

In addition to a lack of subject agreement, (52) also contains two additional verbal morphemes: (1) an intransitive status suffix, and (2) what is called the *agent focus* morpheme (glossed AF) , which is often used when the subject is wh-moved or focused. I will refer to the co-occurrence of these properties as the *agent focus construction*. As (53) shows, the agent focus construction is obligatory in (52). Removing the agent focus morpheme and attempting to pronounce agreement with the wh-subject is not allowed.

(53) *Without AF

* Maktxel max y-il[-a'] ix ix?
who PFV A3SG-see-TV CLF woman

intended: "Who saw the woman?" (Q'anjob'al ex. 21c, p. 193)

The Mayan languages with the paradigm in (50)–(53) are not unique in having special verbal morphology in subject wh-questions. Some Salish languages and the Polynesian language Nukuoro have an exceptional usage of passive morphology when a transitive subject wh-moves, even though the moving subject doesn't look like a *by*-phrase. On the present theory, such morphological effects are expected if these languages utilize the structure and derivation in (49). Though the clause assigns two theta roles, the morphosyntactic alignment looks intransitive because the internal argument is acting as the surface subject.

I therefore propose that the choice between derivation (48) and (49) for a transitive subject wh-question is parametric across languages. UG makes both choices available, but languages differ as to which of the possible structures and derivations they choose to realize. English presumably makes use of the derivation in (48), as evidenced by the fact that English subject questions have the same morphosyntactic alignment as their corresponding non-questions. I argue that Q'anjob'al, by contrast, utilizes derivation (49), which accounts for the unusual morphology found in transitive subject questions.

This chapter focuses specifically on the profile of subject agreement in the Mayan languages that have this pattern. Chapter 7 discusses data from Salish and Nukuoro in the context of other theories of subject extraction. In what follows, we will see how independently motivated properties of Mayan agreement conspire to pronounce the tree in (49) as the agent focus construction. The core of the proposal is that the object in (49) ends up controlling both subject

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and object agreement in subject questions, whereas they typically only control object agreement. Due to the proximity of the agreement-controlling heads in these languages, when two probes both target the same element, I propose that the condition in (54) applies , deleting redundant features on the lower probe. The pronounced form of the probe when all of its features have been deleted is what we call the agent focus morpheme. Important motivation for the present approach comes from the effects of person and binding on observed agreement alignment.

(54) *Anti-redundancy*: Two adjacent φ-probes that cross-reference the same argument X must delete the lower instance of X's features. (cf. Kinyalolo 1991, Oxford 2017)

3.1 Background on the Mayan Language Family

In order to understand the profile of agreement in Mayan subject wh-questions, we need to first establish certain morphosyntactic properties of Mayan languages, both general to the language family and specific to those languages under discussion. The description of Mayan languages found in this section largely draws on descriptions outlined in Tada (1993); Stiebels (2006); Coon, Pedro, and Preminger (2014); Clemens (2019); and Coon, Baier, and Levin (2021); and references therein.

The Mayan language family consists of roughly thirty languages spoken in southern Mexico, Guatemala, Belize, and Honduras by over six million people (Bennett, Coon, and Henderson 2016; Aissen, England, and Maldonado 2017; England 2017; Clemens 2019). Though the family is typically divided into six major subgroups, our focus will only extend to the five in (55). The sixth subfamily, namely the Huastecan branch, is quite divergent and is not often discussed in the context of agent focus constructions.

(55) Mayan language family subgroups (Campbell and Kaufman 1985)
   a. Yucatecan: Yuctec Maya, Lacandon; Itzaj, Mopan
   b. Greater Tseltalan: Ch'ol, Yokot'an, Ch'orti; Tsotsil, Tseltal
   c. K'ichean: Q'eqchi'; Uspantek; Poqom, Poqomchi'; K'iche', Kaqchikel, Tz'utujil, Sakapultek, Sipakapense
   d. Greater Q'anjob'alan: Q'anjob'al, Akatek, Popti', Mocho'; Chuj, Tojol-ab'al
   e. Mamean: Mam, Tektitek; Awakatek, Ixil

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In general, the Mayan languages are verb initial except for Ā-extracted elements, which appear preverbally. They additionally display an ergative-absolutive agreement alignment. As we see in (50) from Q'anjob'al, the agreement affix closest to the verb, often termed the *Set A* series, cross-references the transitive subject. The agreement affix on the TAM particle, often termed the *Set B* series, cross references the transitive object. In an intransitive clause, as in (56), only the Set B morpheme appears. Set B agreement can therefore be described as controlled by canonically absolutive arguments (intransitive subjects and transitive objects), while Set A is controlled by canonically ergative arguments (namely transitive subjects), despite the fact that no overt case marking appears on the nominals in these examples.

(50) Max-ach y-il-a'.
PFV-B2SG A3SG-see-TV
"She saw you." (Q'anjob'al; Coon, Pedro, and Preminger 2014, ex. 12a, p. 187)

(56) Max-ach way-i.
ASP-B2SG sleep-ITV
"You slept." (Q'anjob'al; ex. 12b, p. 187)

The position of verbal morphemes relative to the verb is shown in the template in (57). Set A morphemes have a fixed position in the verbal template across the language family. Set B morphemes, however, may show up pre- or post-verbally depending on the language. In Q'anjob'al, we see that the Set B morpheme appears preverbally, next to the aspect marker. In Ch'ol, shown in (58), the Set B morpheme is post-verbal.

(57) TAM - (Set B) - Set A - [Root - (Voice) - (Status Suffix)] - (Set B), where Set B has a variable position across the family.

(58) Ch'ol (ex. 18, p. 190)
a. Tyi y-il-ä-**yety**.
ASP A3SG-see-TV-B2SG
"She saw you."
b. Tyi uk'-i-**yety**.
ASP cry-ITV-B2SG
"You cried."

Following the description of Tada (1993), a generalization can be drawn that ties the location of Set B in a language to whether it exhibits the AF construction in subject extraction. Languages with preverbal Set B markers have agent focus in subject extraction contexts, while languages with postverbal Set B markers

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typically do not. I assume with Coon, Pedro, and Preminger (2014) and Coon, Baier, and Levin (2021), and references there, that the location of Set B morphology in the verb stem tracks a difference in the location of the Set B probe in the clause, and that this variation can be described as a low- vs. high-absolutive parameter (Aldridge 2004; Legate 2008).

High-absolutive languages are those in which absolutive agreement is controlled by finite T, so the Set B morpheme is pronounced preverbally. Low-absolutive languages are those in which absolutive agreement is controlled by *v*, so the Set B morpheme is pronounced postverbally (assuming that verbs move at least as high as *v*). Evidence for this approach comes from the availability of Set B morphemes in embedded nonfinite clauses. In Ch'ol, Set B agreement surfaces in nonfinite clauses, which is expected if Set B agreement is controlled by *v*, (59a). In K'iche', a language whose Set B morpheme is preverbal, Set B agreement is not observed in nonfinite clauses, which is expected if Set B agreement is controlled by finite T in that language, (59b).[1]

(59) Set B is sensitive to finiteness in high- but not low-absolutive languages

a. Ch'ol—Low-absolutive (Vázquez Álvarez 2011, ex. 22a, p. 99)
K-om [j-käñ-**ety**]
A1-want A1-know-B2
'I want to know you.'

b. K'iche'—High-absolutive (Can Pixabaj 2015, ex. 68b, p. 116)
X-u-chap [nu-kuna-x-iik]
PFV-A3SG-begin A1SG-cure-PASS-ITV
'She began to cure me.'

(60) Summary of the distribution of φ-probes from Coon, Pedro, and Preminger (2014)

a. **High-absolutive:** Set B agreement is controlled by finite T.

1. A complication for this generalization is the fact that Q'anjob'al apparently *does* permit Set B morphology in nonfinite embedded clauses, despite otherwise patterning with high-absolutive languages in the location of Set B and the requirement for AF in subject extraction. Additionally, nonfinite embedded clauses in Q'anjob'al also require the agent focus morpheme, a pattern called the "Crazy antipassive," (i) (Kaufman 1990; Ordóñez 1995; Quesada 1997; Pascual 2007; Coon, Pedro, and Preminger 2014). Potentially relevant to understanding this pattern is the fact that the Set B morpheme stands alone as an independent clitic pronoun in (i). This property is also reminiscent of the requirement for (anti)passive in K'iche' nonfinite embedded clauses.

(i) Chi uj [hach y-il-**on**-i]
IPFV be.able.to B2SG A3SG-see-AF-ITV
"She can see you." (Q'anjob'al; Coon, Pedro, and Preminger 2014, ex. 2, p. 180)

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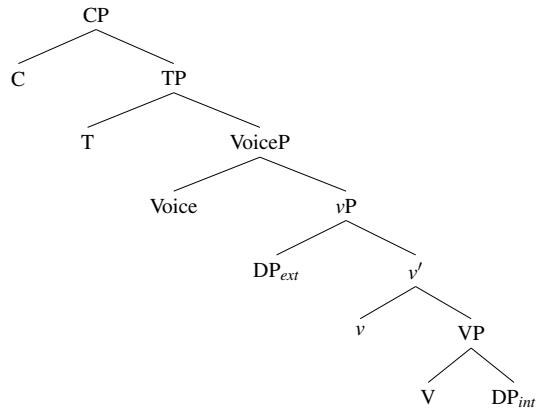
b. **Low-absolutive:** Set B agreement is controlled by *v* in transitives and finite T in intransitives.

While the source of Set B differs across languages, there is no reason to suspect that the same is true for Set A agreement. Set A always appears in both finite and nonfinite contexts and has a uniform position in the verb stem. It seems therefore that Set A must be exponed on a head lower than finite T in both high- and low-absolutive Mayan languages. Coon, Pedro, and Preminger (2014) propose that Set A is the exponent of *v* after a process of feature sharing between *v* and its specifier. This view requires *v* to be sensitive to whether its specifier was internally vs. externally merged, however, because Set A only occurs with transitive subjects. If *v always* shared the features of its specifier, we would expect intransitive subjects to yield Set A agreement as well.

In the absence of a general theory of spec-head feature sharing, and in the interest of maintaining a uniform theory of Agree, I will propose that Set A, like Set B, is a normal downward probing φ-probe on a head between *v* and finite T. A candidate for this Set A probe is Voice. Ranero (2023) has shown, with evidence from active-passive mismatches in ellipsis, that Mayan languages have a structure like that proposed by Merchant (2013).

(61) Proposed clause structure from Merchant (2013).



Assuming that Voice is the locus of the active-passive distinction, for VP ellipsis to allow active-passive mismatches, it must target a constituent below Voice (or else identity with the antecedent VP would not be met). Merchant has shown for English that the elided constituent may contain the base position of the transitive subject, thus advocating for a view in which Voice c-commands the base position of the external argument in addition to the rest of the verb phrase. Ranero has corroborated similar facts in Kaqchikel, a high-absolutive

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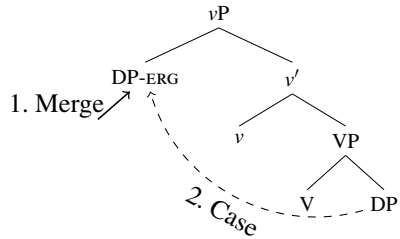
language, so I assume his clause structure is appropriate in general. A Set A probe on Voice could therefore probe downwards and agree with a transitive subject in Spec *v*P.

An advantage of this approach is that Set A agreement is only predicted to occur in clauses that project a VoiceP. By hypothesis, only clauses that can undergo the passive alternation have a VoiceP. Since the passive alternation requires promotion of an internal argument and demotion of a transitive subject, transitive clauses should project Voice, but unergative/unaccusative clauses should not. This proposal therefore straightforwardly predicts the presence of Set A in finite and non-finite transitive clauses, but its absence in intransitive clauses.

With these assumptions, we are in a position to understand the basic agreement alignment of transitive clauses in high-absolutive Mayan languages, which are the focus of our study. Since Set A cross-references canonically ergative arguments while Set B only cross-references absolutive arguments, we need a theory of case assignment and a theory of agreement that interacts with case. First, I propose that ergative is assigned via a dependent case mechanism like that outlined in (62), which is based on Marantz (1991).[2] In (62), completion of the *v*P domain via Merge of a specifier causes any DPs inside *v*P to be evaluated for case. The dependent case algorithm assigns unmarked case by default, and ergative case to any DP that c-commands another DP within *v*P (Marantz 1991; M. C. Baker 2014).

(62) Dependent case assignment happens when the subject is merged



Since case is assigned before higher functional heads merge with *v*P, the output of the dependent case algorithm feeds the φ-probes on Voice and T. The Set A probe on Voice must be able to agree with the first DP it finds, regardless of case, which is what enables it to target the ergative subject. The Set B probe on T, by contrast, must be case discriminating—it skips the ergative subject and

2. Longenbaugh (2019) implements a version of this dependent case algorithm for nominative case alignment in Romance languages.

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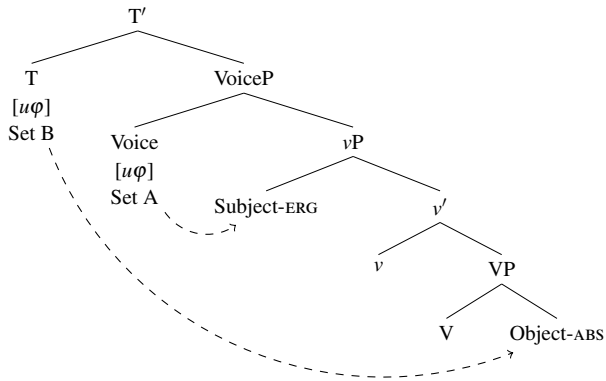
only copies the features of the absolutive object. The properties of these probes are summarized in (63), (64).

(63) *Case Accessibility* (J. D. Bobaljik 2008; Preminger 2014): Accessibility to Agree is determined according to the *Revised Moravcsik Hierarchy*: unvalued Case > dependent Case > lexical and other Case.

(64) a. T's φ-probe agrees with the closest **absolutive** argument.
b. Voice's φ-probe agrees with the closest argument.

Assuming nothing else happens in the course of the derivation, these assumptions predict that Set A agreement will cross-reference the subject because it is the closest argument to it, while Set B will skip over the subject and agree with the object, which is the closest *absolutive* argument to it. This derivation predicts the observed transitive agreement alignment that we find.[3]

(65) If T is case-discriminating, it will skip the ergative subject and agree with the object.



We will now see how the distribution and properties of φ-probes in the high-absolutive Mayan languages, combined with the derivation of subject wh-questions in (49), predict the observed agreement alignment for transitive subject and object questions.

3. It is important on this theory that the contents of *v*P be accessible to agreement with T. On some other proposals, only *v*'s specifier (and in some cases, only its outermost specifier) is accessible to operations at TP, on the assumption that *v*P is a phase, which renders its contents opaque at some point in the derivation. If phases become opaque before T is merged, the object should not be accessible to agreement, leading some authors to propose that objects must raise to a higher position to control agreement on T (see for example Coon, Pedro, and Preminger 2014). I propose that this is not the case. Following Chomsky (2001), if *v*P becomes opaque only after the next phase head (C) is merged, the contents of *v*P should still be accessible to T.

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3.2 Mayan AF Constructions

Examples (50)–(53), repeated below, demonstrate the core pattern of interest in certain Mayan languages' wh-questions. These examples are from Q'anjob'al, which can be identified as a high-absolutive language by the fact that its Set B marker is preverbal. As we can see, transitive clauses exhibit both Set A and Set B morphology. Object wh-questions have essentially the same verbal morphology as regular transitive clauses. Subject wh-questions, by contrast, lack a Set A marker and have special verbal morphology.

(50) Max-ach y-il-a'.
PFV-B2SG A3SG-see-TV
"She saw you." (Q'anjob'al Coon, Pedro, and Preminger 2014, ex. 12a, p. 187)

(51) Maktxel max y-il naq winaq?
who PFV A3SG-see CLF man
"Who did the man see?" (Q'anjob'al ex. 21b, p. 192)

(52) Maktxel max-ach il-**on**-i?
who PFV-B2SG see-AF-ITV
"Who saw you?" (Q'anjob'al ex. 1, p. 180)

(53) * Maktxel max y-il[-a'] ix ix?
who PFV A3SG-see-TV CLF woman
intended: "Who saw the woman?" (Q'anjob'al ex. 21c, p. 193)

Important to note is that the verbal morphology found in subject questions like (52) is unique to these contexts. In other words, the agent focus morpheme is not like other Voice morphemes, which are used productively in non-questions to change the valency of a verb. The agent focus morpheme rather looks like a morphological reflex of wh-moving a transitive subject, and does not alter the morphology of any arguments. Contrast the two non-oblique arguments in the agent focus construction in (52) with the antipassive clause in (66), where the internal argument is oblique and optionally dropped.[4]

4. In a few high-absolutive Mayan languages, for example, Poqomchi', an AF-like strategy is used in subject extraction contexts that looks identical to the antipassive construction. The AF morpheme in (4) is the same as the morpheme that shows up independently in antipassives. The object appears with an overt oblique marker (glossed RN for *relational noun*), and Set B targets the *subject* instead of the object. These are all hallmarks of antipassive clauses more generally: the normally ergative subject is assigned absolutive when the object is demoted, and is therefore accessible to the Set B probe on T.

(ii) Poqomchi' subject extraction: subject controls Set B+object is oblique = antipassive

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(66) Q'anjob'al antipassive: Subject controls Set B+object is oblique (and optional)

Maktxel max maq'-**waj**[-i] ($_{obl}$y-in no tx'i')?
who ASP hit-AP-ITV 3A-RN CLF dog

'Who hit the dog?' (Coon, Pedro, and Preminger 2014, ex. 60, p. 214)

I therefore propose that the agent focus morpheme is not a dedicated Voice morpheme that heads a special construction. Instead I propose that it is an allomorph of the transitive Voice head, which is realized whenever the φ-probe on that Voice head fails to realize an argument's φ-features. Looking at the derivation and case properties of a transitive subject question, we find subject questions are exactly such a case when Voice should fail to realize φ-features, and thus should be pronounced as an elsewhere form.

(67) AF is the realization of Voice$_{act,trans}$ whenever its φ-probe fails to realize any features.

Recall the derivation in (49), repeated below, which is proposed to be the derivation that Q'anjob'al uses for its transitive subject questions. In (49), the object moves to Spec *v*P before the wh-subject is merged, which causes the second-merged wh-subject to tuck in under the object. We can now evaluate each of these derivational steps relative to the dependent case algorithm.

---

reʔ hin x-in-b'-uhyu-n-ik r-eh
the I ASP-B1SG-quiet-AF-ITV 3SG-RN(=OBL)

'I am the one who quieted him down.' (J. Dayley 1981, ex. 45, p. 22)

I will set aside languages like Poqomchi' for the the most part, assuming with Coon, Baier, and Levin (2021) that such languages do not have a strategy for subject extraction that is distinct from the antipassive. Languages like Poqomchi' seem to display a pattern shared by some other ergative languages that restrict subject extraction to the antipassive, which are discussed in chapter 7.

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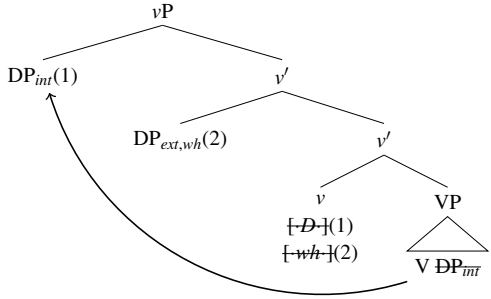
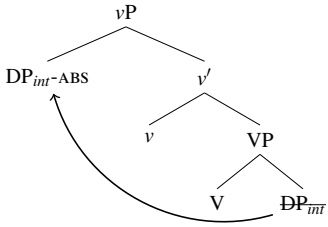
(49) Option 2 for subject wh-questions: [·*D*·] is checked by the object first, and the subject is licensed by [·*wh*·].



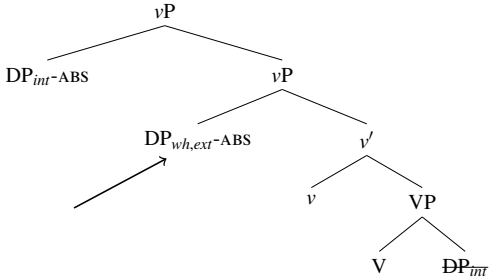
When the object moves, a *v*P domain is formed, which triggers dependent case assignment (68a). Since the object is the only DP in the clause at the time of movement, it is left unmarked for case (absolutive). When the wh-subject merges second, tucking in under the object (68b), case has already been assigned. As a result, the wh-subject is also left unmarked for case (absolutive).

(68) Only the outer specifier of *v*P gets evaluated for case.

a. Step 1: Move object. Step 2: Evaluate *v*P for case → assign object absolutive.



b. Step 3: Merge subject. Case has already been assigned so subject is unmarked (absolutive).



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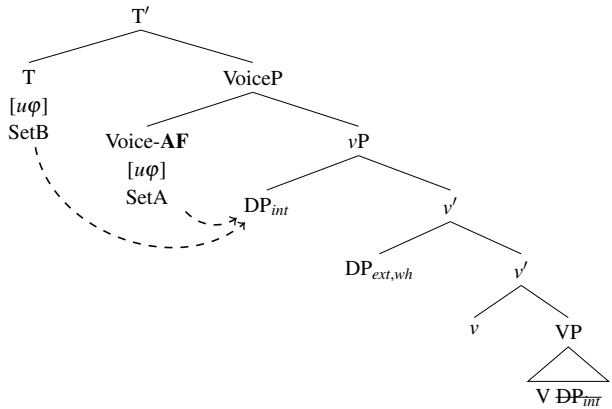
Once Voice and T are merged, they probe for the closest DP and absolutive DP, respectively. Both of them find the absolutive internal argument. The constraint in (54) against redundant φ-features on adjacent probes causes the lower set of features to delete, which causes Voice to be pronounced as the agent focus morpheme rather than Set A agreement.

(54) *Anti-redundancy*: Two adjacent φ-probes that cross-reference the same argument X must delete the lower instance of X's features.

(69) Voice agrees with closest DP, namely the absolutive marked outer specifier of *v*P. T agrees with the closest absolutive marked DP, which is the same outer specifier of *v*P. Set A agreement therefore cross-references the same DP as Set B agreement resulting in redundancy, resolved by AF.



This agreement profile does not arise in object wh-questions. In transitive object wh-questions, the external argument must merge first, before wh-movement takes place, or else it will be blocked. Once the external argument merges, it receives ergative case. The wh-object then moves, tucking in under the subject. The resulting structure feeds normal transitive agreement alignment—Voice agrees with the closest DP, which is the ergative subject, and T agrees with the closest absolutive DP, which is the absolutive wh-object.

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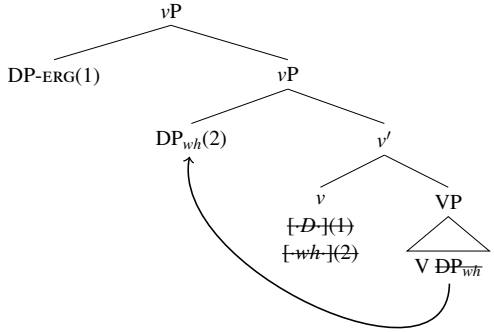
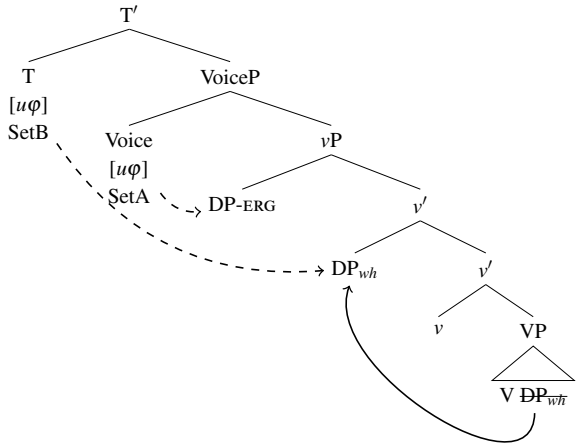
(70) If the internal argument satisfies all of *v*'s features, it must move second or else it would block insertion of the external argument.



(71) Result: regular transitive agreement alignment



In sum, the assumptions about Merge features outlined in chapter 2, combined with the proposal that *v* bears two features [·*D*·] and [·*wh*·], predicted that UG offers a derivation of transitive subject questions in which the object A-moves. We have seen that Q'anjob'al transitive subject questions fail to agree with the external argument, and instead use a special elsewhere form for the probe that would otherwise have targeted the external argument. I proposed that this morphosyntactic profile is easily derived from the derivation in (49), where A-movement of the object leads to too much agreement with the same element. Q'anjob'al therefore provides support for the overall approach taken

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here—transitive subject questions are in principle compatible with more agreement outcomes than transitive object wh-questions are, because they can be derived by either of two orders of operations, while transitive object questions only have one viable derivation. We therefore expect more crosslinguistic variation in the agreement alignment of subject questions than object questions as we indeed find.

While certain core properties of subject extraction are similar throughout high-absolutive Mayan languages, there is some variation regarding (1) the use of the AF morpheme outside of wh-questions, and (2) the effects of person features on the use of AF and the corresponding agreement alignment. Both of these points of variation provide additional support for the present approach.

3.3 Variation in Agreement Profiles

3.3.1 AF and the Antipassive

In some Mayan languages that use agent focus for subject extraction, for example, Tz'utujil, the agent focus marker is homophonous with the antipassive morpheme. This can be seen in (72) and (73), where the same morpheme apparently licenses subject extraction with either an oblique or a non-oblique internal argument. When the internal argument is oblique, object agreement targets the subject instead. In sum, the same Voice morpheme can be seen in clauses that otherwise look like antipassives, or in clauses that otherwise look transitive. It is worth noting that the Proto-Mayan AF suffix, reconstructed by Smith-Stark (1978) as *-(V)n, is often used as the true antipassive, that is, with demoted objects (see discussion in Stiebels [2006]).

(72) Tz'utujil AF construction: Set B targets absolutive object

Jar aachi x-**ee**-ch'ey-ow-i jar iixoq-ii?.
DET man PFV-B3PL-hit-AF-ITV DET woman-PL

'The man was the one who hit the women.' (J. Dayley 1981, ex. 90a, p. 483)

(73) Tz'utujil antipassive: Set B targets absolutive subject

Atet x-**at**-ch'ey-o w-xiin.
you PFV-B2SG-hit-AP/AF 1SG-OBL

'You were the one who hit me.' (ex. 93b, p. 485)

I argue that this is no accident. What subject extraction and the antipassive have in common is the fact that the highest specifier of *v* is *absolutive* in both cases, which makes it accessible to every φ-probe higher in the clause. It is

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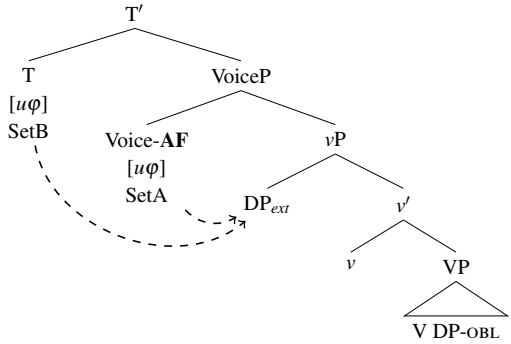
therefore possible that in languages like Tz'utujil, there isn't really a dedicated "antipassive" flavor of Voice just as there is no dedicated "agent focus" flavor of Voice. Rather, there is optionality in how to realize internal arguments, which has consequences for case and agree. Oblique internal arguments cause external arguments to be unmarked for case. This makes them accessible to both the Set A probe on Voice as well as the Set B probe on T. We therefore expect anti-redundancy to apply in both "agent focus constructions" as well as "antipassives." Voice should be exposed as the elsewhere form in both contexts.

(74) Antipassives: If the internal argument is no longer a case competitor, the external argument is accessible to both Voice and T → anti-redundancy applies, which is resolved by AF/AP morpheme.



This view of Tz'utujil antipassives corroborates a claim from Polinsky (2017), who notes that it is extremely rare, if attested at all, for an antipassive morpheme to be truly unique in a language. Typically, the antipassive morpheme is syncretic with other Voice or aspect morphemes, suggesting that its distribution is not determined by the choice of a special antipassive Voice head, but is a morphological reflex of other properties of these clauses. If this is generally true, however, it raises questions for the right treatment of antipassives in, for example, Q'anjob'al, whose antipassive morpheme is *different* (*-waj*) than the morpheme that appears in subject extraction (*-on*).

(66) Q'anjob'al antipassive: Subject controls Set B+object is oblique (and optional)

Maktxel max maq'-**waj**[-i] ($_{obl}$y-in no tx'i')?
who ASP hit-AP-ITV 3A-RN CLF dog

'Who hit the dog?' (Coon, Pedro, and Preminger 2014, ex. 60, p. 214)

To understand the Q'anjob'al antipassive, I can imagine either of two views: (1) Q'anjob'al, unlike Tz'utujil, has a dedicated antipassive Voice, or (2)

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Q'anjob'al does not have a dedicated antipassive Voice, but the morpheme used in antipassives is different from the AF morpheme due to contextual allomorphy. Since an investigation of the Q'anjob'al antipassive is outside the scope of this chapter, I will not offer a solution to this question. I will note, however, that there is some evidence in support of a contextual allomorphy view of the Q'anjob'al antipassive.

As discussed by B. E. Mateo-Toledo (2008), the Q'anjob'al antipassive morpheme *-waj* is not productive—it is apparently only allowed by a small subset of verbs (roughly thirty verbs). By contrast, other Voice morphemes like the passive are fully productive. The availability of oblique internal arguments therefore seems to be lexically determined, and those verbs and aspectual environments that permit oblique internal arguments trigger a different allomorph of the AF/AP morpheme on Voice.

It is therefore possible that the AP morpheme *-waj* and the AF morpheme *-on* actually have the same source—they could both be the spell-out of a Voice head that has redundantly agreed with some argument. They end up pronounced differently on account of environmental and lexical factors characteristic of antipassive clauses in Q'anjob'al, which may trigger a different allomorph of the elsewhere form on Voice.[5]

3.3.2 AF and the Person Hierarchy

On the present approach, both the internal and the external arguments in a transitive subject question are in principle accessible to agreement. They are both absolutive specifiers of *v*P, which means they both have the case profile necessary to make them a viable goal for either Set A or Set B agreement, and they are local enough to the probes on Voice and T to be visible to them. However, Relativized Minimality prefers agreement with the object to agreement with the subject, because the object c-commands the subject. This account therefore makes an important prediction, which is that the subject would be accessible to agreement (either Set A or Set B or both) if either probe were able to skip over the object for some reason.

In fact, we find that in several Mayan languages with agent focus constructions, agreement with the subject reappears whenever the subject is a participant. In Q'anjob'al, focused participant subjects control Set A agreement, and no AF morphology appears. In K'iche', focused participant subjects

5. Another fruitful line of investigation might be the "Crazy antipassive" in Q'anjob'al. Certain aspectual environments in Q'anjob'al (e.g., split ergative environments and nonfinite embedded clauses, see Quesada [1997] for discussion) trigger the use of the AF morpheme even when no argument is extracted. Studying the case and agreement profiles of those contexts might bring them within the purview of the treatment of AF in this chapter, but I leave that to future research.

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control Set B agreement, and AF morphology remains. Following Stiebels (2006), we can conclude that some languages/probes are sensitive to the feature hierarchy in (77), which she calls the *salience hierarchy*.

(75) Q'anjob'al: Focused participant subjects obviate AF

Ayin max **hin**-maq'[-a'] no tx'i'.
PRO 1SG PFV **A1**-hit-TV CLF dog

'*I* hit the dog.' (Coon, Pedro, and Preminger 2014, ex. 72b, p. 223)

(76) K'iche': Set B cross-references focused participant subject with AF

In x-**in**-il-ow le ak'al-ab'
PRO 1SG PFV-**B1**SG-see-AF DET child-PL

"*I* saw the children." (Davies and Sam-Colop 1990, ex. 34a, p. 531)

(77) *Salience hierarchy:* 1/2 > 3pl > 3. (Stiebels 2006, p. 526)

Recalling the discussion of Béjar and Rezac (2009) in chapter 2, we know that φ-probes in some languages/contexts are specified to search for participant features. If the first φ-goal that they find doesn't have participant features, the probe may search again until it finds them, only copying back features of subsequent goals if they add to the value of the probe. If either/both of the φ-probes in Q'anjob'al and K'iche' are specified to search for participants, they will agree with the external argument if the external argument is a participant and the internal argument is not. This is exactly what we find in (75) and (76).

The difference between Q'anjob'al and K'iche', however, is that a different probe finds the participant in each case: Set B agrees with the participant subject in K'iche' but Set A agrees with the participant subject in Q'anjob'al. I propose that this is because different probes in different languages are endowed with participant features. In Q'anjob'al, only the Set A probe bears a participant probe, while in K'iche', both Set A and Set B bear participant probes. As a result, Q'anjob'al subject agreement shows the profile in (79)—the Set A probe agrees with both arguments, but the Set B probe only agrees with the object. K'iche', by contrast, has the profile in (80), where both probes agree with both arguments. In Q'anjob'al, the object's features are copied onto both Voice and T, so Voice deletes the object's features, leaving behind those of the subject. In K'iche', both arguments' features are copied twice, so Voice deletes all of its features, resulting in AF morphology.

Importantly, I follow Preminger in assuming that the entire φ-feature set of a φ-goal is copied back to the probe (78), even if the the probe is only searching for a specific kind of φ-feature. Thus, a person probe may cause a head to bear

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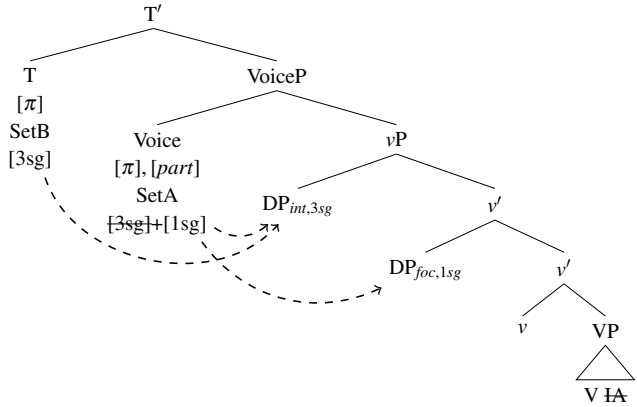
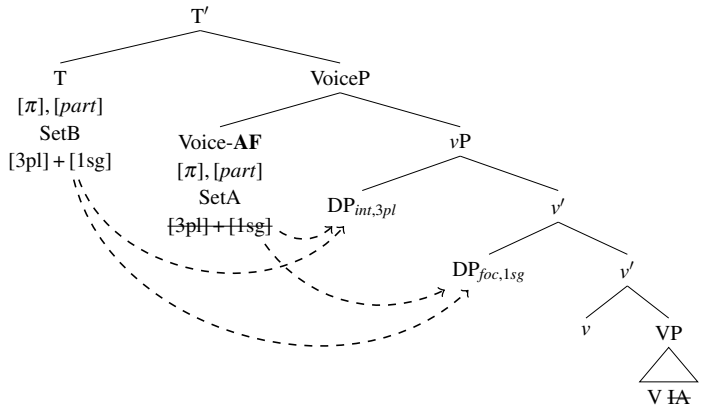
both the person and number features of the element it agrees with, even if that head does not bear a separate number probe.

(78) *Coarse* copying (Preminger 2014): The probe copies the entire φ-feature set of the goal.

(79) Q'anjob'al participant subject focus: Voice copies the features of both the subject and the object. T only copies the features of the object. Anti-redundancy deletes the lower instance of the object's features, leaving Set A to realize the features of the subject.



(80) K'iche' participant subject focus: Both Voice and T agree with both arguments, deleting the lower feature sets and resulting in AF.



We don't see the effects of the salience hierarchy in non-wh-contexts because the external argument is assigned ergative case in a typical transitive clause, which makes it inaccessible to Set B agreement. Only one probe ever copies back the features of the external argument, namely the Set A probe. Even if that

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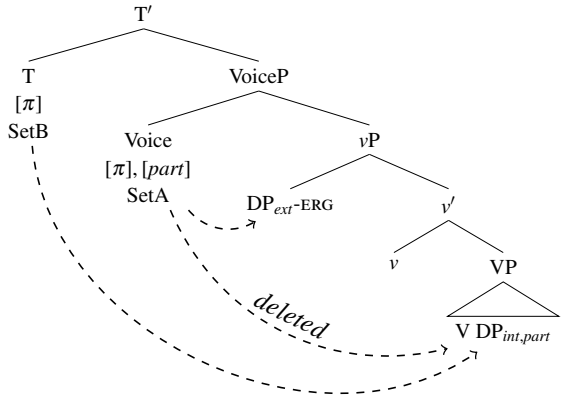
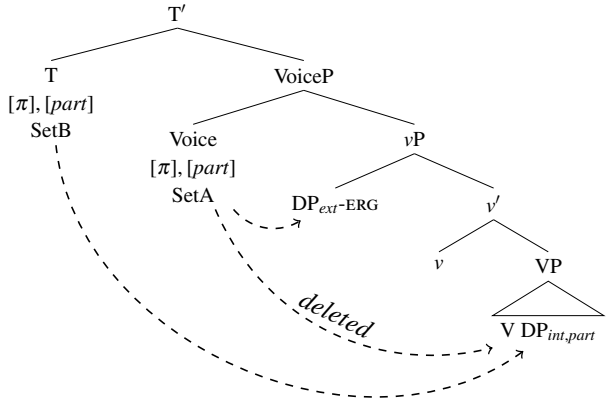
probe also copies back the features of the internal argument (perhaps because the internal argument is a participant), the internal argument's features will always be deleted, since Set B copies them as well.

(81) Q'anjob'al transitive clauses: The probe on Voice agrees with both the subject and the object. The probe on T skips the ergative subject and copies the features of the object. Redundant agreement with the object is resolved by deleting the lower instance of the object's features, leaving those of the subject to be spelled out as Set A morphology.



(82) K'iche' transitive clauses: Same as Q'anjob'al. The Set B probe, though omnivorous and hierarchy sensitive, is still case discriminating and only targets the absolutive object.



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So far, I have represented the person effects in Q'anjob'al and K'iche' as a response to the distribution of [π] and [*part*] probes in the two languages. This seems to be the right approach for Q'anjob'al, which agrees with the external argument *only* when it is a participant and not when it is plural. Q'anjob'al probing is therefore clearly only sensitive to the person hierarchy and not the number hierarchy.

(83) Q'anjob'al has no number effects

A heb' x-∅-'a'-on ayudar.
FOC they COM-B3SG-give-AF help

'They were the ones who helped (somebody).' (E. Mateo-Toledo 2012, ex. 18a, p. 474)

However, an amendment is necessary to capture situations in which *both* the subject and the object are participants. If Set A had the two features [π] and [*part*], we would expect it to be satisfied upon finding a participant object, and never probe past it to the subject. This is not what we find, however. When both the subject and object are participants, transitive agreement alignment remains, meaning that the subject is still accessible to agreement. It seems therefore that the Q'anjob'al person hierarchy is more fine-grained than that in Basque. While Basque only distinguishes participants from nonparticipants, Q'anjob'al appears to distinguish *speaker* from *addressee* as well.

(84) a. Ayon-on max-ach ko-tay-ne-j hon.
we-EXCL COM-B2S A1PL-??-CAUSE-TV EXCL
'We were the ones who took care of you.' (B. E. Mateo-Toledo 2008, ex. 72b, p. 76)

b. *Ayon-on max-ach tay-ne-n-i.
we-EXCL COM-B2S ??-CAUSE-AF-TV
intended: 'We were the ones who took care of you.' (ex. 72a, p. 76)

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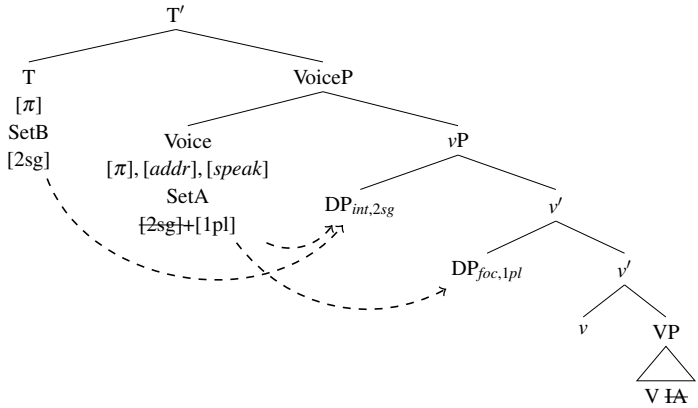
(85) Q'anjob'al multiple participants with subject focus: Voice copies the features of both the subject and the object. T only copies the features of the object. Anti-redundancy deletes the lower instance of the object's features, leaving Set A to realize the features of the subject.



If both arguments are participants [as in (84a)], the features on Voice are only satisfied if they agree with both of them, because neither feature outranks the other on the hierarchy: having first-person features does not entail having second-person features and vice versa. When Set B redundantly agrees with the object, anti-redundancy therefore only deletes *one* of the feature sets on the Set A probe. The other feature set is pronounced, which results in transitive agreement alignment. The complete predicted typology of person effects for subject extraction in Q'anjob'al is in (86).

(86) Predictions for Q'anjob'al subject extraction, in which Set A has [π], [*addr*], and [*speak*], while Set B only has [π]

Subject → Object ↓	3sg	3pl	1sg/pl	2sg/pl
3sg	AF	AF	no AF	no AF
3pl	AF	AF	no AF	no AF
1sg/pl	AF	AF	N/A	no AF
2sg/pl	AF	AF	no AF	N/A

K'iche' differs from Q'anjob'al in that its Set B probe is also sensitive to participant features. In addition, K'iche' agreement is sensitive to the number hierarchy (Preminger 2014). This is shown in (87) for Kaqchikel, one of the languages in the Kichean branch of the Mayan languages, but Preminger suggests that this profile is observed in the other languages in that branch as well. In (87), we see that when both arguments are third person, but one is plural,

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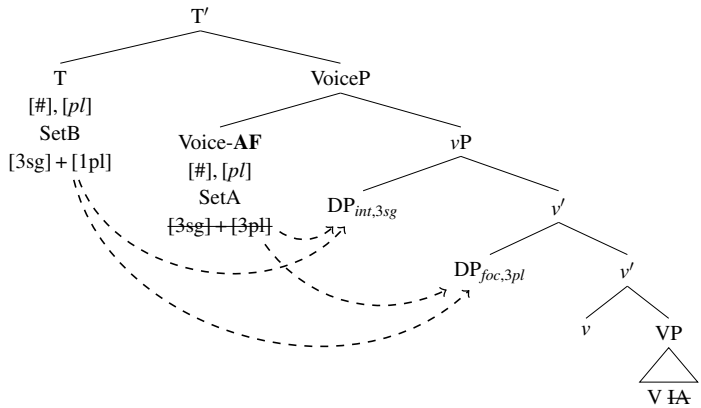
Set B agreement always agrees with the plural argument, regardless of whether it is the subject or the object. This is exactly the same profile that we saw for participants. Preminger therefore proposes that a separate probe [#] (number) must be present on Kichean φ-probes as well as [π]. As discussed in chapter 2, the number hierarchy makes [*sg*] the unmarked feature and [*pl*] the marked feature.

(87) Kaqchikel (Preminger 2014, ex. 19, p. 20)

a. Ja rje' x-e/*∅-tz'et-ö rja'.
FOC them COM-B3PL/*3SG-see-AF him
'It was them who saw him.'

b. Ja rja' x-e/*∅-tz'et-ö rje'.
FOC him COM-B3PL/*3SG-see-AF them
'It was him who saw them.'

(88) K'iche' plural subject focus: Both Voice and T agree with both arguments, deleting the lower feature sets and resulting in AF.



In addition to showing sensitivity to number, K'iche' shows speaker variation with respect to focus constructions with multiple participants. Some speakers prefer (89a), where AF morphology is preserved and Set B cross-references the highest participant. Some speakers, by contrast, prefer the Q'anjob'al pattern in (89b), where transitive agreement alignment reappears—Set B cross-references the object while Set A cross-references the subject. This kind of variation is expected if the Set A probe has variable specifications for different speakers: some speakers have a [*part*] probe, while others split [*part*] into [*addr*] and [*speak*] as in Q'anjob'al.

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(89) K'iche': Some speakers allow AF+Set B when both arguments are participants, while others require regular transitive alignment.

a. At x-in-xibi-n pa b'ee.
PRO2SG PFV-B1SG-scare-AF P path
'*You* scared me in the path.' (Coon, Baier, and Levin 2021, ex. A7, p. 318, citing López Ixcoy 1997, p. 369)

b. In k-at-in-to'-oh.
PRO1SG IPFV-B2SG-A1SG-help-TV
'*I* will help you.' (Mondloch 1981, ex. 623, p. 223)

(90) Predictions for K'iche', in which both Set A and B have [π] and [#], [*part*] and [*pl*] (Set A has [*addr*] and [*speak*] instead of [*part*] in some varieties) (VAR=variation)

Subject → Object ↓	3sg	3pl	1sg/pl	2sg/pl
3sg	AF	AF+S_{agr}	AF+S_{agr}	AF+S_{agr}
3pl	AF	AF	AF+S_{agr}	AF+S_{agr}
1sg/pl	AF	AF	N/A	VAR
2sg/pl	AF	AF	VAR	N/A

A remaining puzzle has to do with the pronunciation of multiple feature bundles on a single head. In many of the derivations sketched above, the Set B probe ends up agreeing with multiple arguments. However, Set B agreement only ever seems to *pronounce* the features of one. In the Kichean language Kaqchikel, Preminger (2014) shows that Set B agreement only realizes the features of the participant in (91), despite the fact that the third-person plural features of the object should also have been copied onto the probe. Moreover, we do not observe a portmanteau form combining the features of the both arguments.

(91) Ja yïn x-i/*oj-tz'et-ö rje'.
FOC me COM-B1SG/*1PL-see-AF them
'It was me who saw them.' Kaqchikel (ex. 20b, p. 20)

The problem suggested by the lack of 1pl agreement in (91a,b) is partially explained by the notion of feature copying presented here. The sets of features on the probes in (91b), for example, are not lists of individual specifications for person and number, but rather two distinct feature sets: [1sg]+[3pl]. The fact that this set of features is not pronounced with the morpheme associated with [1pl] is not entirely surprising: we would not necessarily expect two distinct feature bundles to have the same VI rule. Nonetheless, we might wonder why the output of Agree doesn't include *both* the morphemes associated with [1sg] and [3pl], given that both are present on the probe.

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I follow Stiebels (2006); Aissen (2017); Watanabe (2017); and Coon, Baier, and Levin (2021) in attributing the lack of portmanteau agreement on Set B to a morphological restriction on the output of Set B. When two competing feature bundles occur on the same head, the PF interface chooses one or the other, but not both. In this case, given that participants outrank 3pl on the hierarchy, 1sg is apparently chosen as the exponent of Set B.

In sum, Q'anjob'al and K'iche' were proposed to have φ-probes that are sensitive to a feature hierarchy, which account for their respective sensitivities to person and number in subject extraction contexts. Q'anjob'al and K'iche' were proposed to differ in two respects: (1) the number of hierarchy sensitive probes, and (2) the hierarchies they were sensitive to. Q'anjob'al was proposed to only have one hierarchy-sensitive probe, which is only sensitive to the person hierarchy (Q'anjob'al: 1/2 > 3). K'iche' was proposed to have two hierarchy-sensitive probes, which are sensitive to both person and number (1/2 > 3pl > 3sg). The fact that agreement copies entire feature sets, which may be selectively targeted by anti-redundancy, derived the full typology of person effects in both non-subject extraction and subject extraction contexts.

3.4 AF-Obviating Environments

As described by Coon, Baier, and Levin (2021) and references there, there are three environments that obviate the requirement for agent focus in subject extraction, which are not already covered by the effects of person discussed in the previous section. These environments include: (1) NP objects, (2) anaphoric objects, and (3) multiple fronting.

I argue that each of these environments is predicted not to have the derivation in (49) due to properties inherent to binding and the categories of Merge features on *v*. Hence they are not predicted to result in the agent focus morphology and agreement alignment. As a result, I propose that these special cases in fact provide evidence for the approach to subject extraction taken here.

3.4.1 NP Objects

It has been observed for K'iche' that subject extraction is permitted without the agent focus construction if the object is an NP rather than a DP. In (92), we see that the subject can wh-extract and control Set A agreement as long as the object has no overt determiner.

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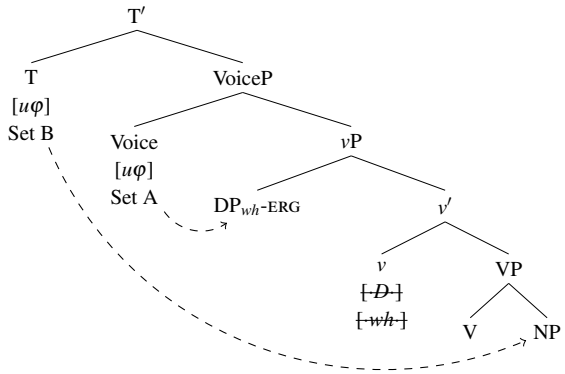
(92) No AF with NP objects (K'iche'; Aissen 2011: ex. 25a, p. 12)

Jachiin x-u-loq' (*rii) uuq?
WH PFV-A3SG-buy DET cloth

'Who bought the cloth?'

Assuming with Coon, Baier, and Levin (2021) that the object in (92) is an NP rather than a DP, the derivation that leads to agent focus should never obtain. The reason for agent focus in other contexts is that the object checks *v*'s [·*D*·] feature instead of the subject. However, if the object is *not* a DP, it cannot move to Spec *v*P and check a [·*D*·] feature. In this situation, the derivation in (93) is the only one available for a subject wh-question because only one argument, namely the external argument, can check the [·*D*·] feature on *v*.

(93) NPs don't satisfy [·*D*·], so the regular transitive agreement alignment always arises even in subject wh-questions.



The agreement alignment in (92) is still that of a regular transitive clause despite the fact that the object's category is different than usual. NP objects still control overt Set B agreement in the analogous (94), which follows under the following two assumptions: (1) NPs are case competitors, and (2) NPs are accessible to φ agreement.

(94) NP complements still control set B (Pascual 2007; Coon, Baier, and Levin 2021)

Ma jun achi taj k-**e'**-u-b'oq alaj **taq** chee'
NEG INDF man IRR INC-B3PL-A3SG-uproot DIM PL tree

'It's not a man that is uprooting little trees.' (K'iche'; Aissen 2011, ex. 25d, p. 12, citing López Ixcoy 1997, p. 398)

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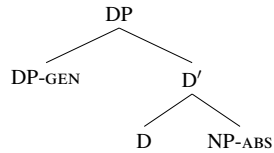
The conjecture that NPs can control φ-agreement requires a structure for nominals in which φ-features are structurally lower than the D layer of nominals (Carstens 1991; Ritter 1991; 1993; Danon 2011; Harbour 2011; Fong 2021, cf.). Thus, φ-agreement does not depend on the presence of a D head because a determiner-less nominal may still have φ-layers, as evidenced by the plural morphology on the determiner-less object in (94).

It is additionally important that the non-DP object in (94) is a case competitor. If the subject were absolutive, it should control *both* Set A and Set B agreement and result in AF morphology. The fact that it doesn't suggests that the subject is still ergative, and is thus only accessible to the Set A probe. In support of this analysis, note that Set A marking is used in the nominal domain to cross-reference possessors as well as in the clausal domain to cross-reference ergative subjects, which suggests some unity between ergative subjects and DP-internal possessors. This would be expected if Set A morphology were always the head marking exponent of a dependent ergative/genitive case: assigned *v*P-internally for transitive subjects, and DP-internally for possessors (Marantz 2000; McFadden 2004; Colley 2015, cf.). If genitive is a DP-internally assigned dependent case, the NP possessee inside the DP must count as a case competitor for the DP possessor.

(95) Dependent genitive case inside nominals: NP must be a case competitor



In sum, NP objects obviate the agent focus construction for the following reason: though NP objects control agreement and figure into dependent case assignment, they cannot check *v*'s [·*D*·] feature. Therefore, subject wh-questions with NP objects have the same derivation as transitive clauses, which results in the same agreement alignment as that of a transitive clause.

3.4.2 When the Subject Binds into the Object

When a wh-moved transitive subject binds into the object, the resulting clause may have normal transitive agreement alignment instead of AF. In some languages, like Q'anjob'al, AF is in fact ruled out in these contexts. An AF construction with a possessed object requires non-coreference between the subject and object in (96c).

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(96) No AF with Reflexive objects or Extended reflexive objects

a. Maktxel max y-il **s-b'a**?
who PFV A3SG-see A3SG-self
'Who saw herself?' (Q'anjob'al; Coon, Pedro, and Preminger 2014, ex. 75a, p. 225)

b. Maktxel max s-b'on **s-na**?
who PFV A3SG-paint A3SG-house
'Who$_i$ painted his$_{i/*j}$ house?' (Q'anjob'al; ex. 76a, p. 226)

c. Maktxel max b'on-on[-i] **s-na**?
who PFV paint-AF-ITV A3SG-house
'Who$_i$ painted his$_{*i/j}$ house?' (Q'anjob'al; ex. 76b, p. 226)

There are two features of (96) that need to be explained: (1) the fact that agent focus corresponds to obligatory non-coreference between the subject and object, and (2) the fact that (96a,b) can be derived without agent focus. The first puzzle is readily explained by the theory. In agent focus constructions, the subject crosses the object when it Ā-moves to Spec CP, which violates weak crossover (WCO).

(97) [$_{CP}$ Who$_i$ [$_{TP}$ SetB [$_{VoiceP}$ AF [$_{vP}$ **his**$_i$ house [$_{vP}$ ~~who$_i$~~ [$_{VP}$ painted ~~his$_i$ house~~?
WCO

Larsen (1987) shows that in K'iche', which shares the Q'anjob'al pattern in (96) (Hou 2013), there is obligatory non-coreference between the subject and object in an analogous object wh-question (98), which can likewise be explained by WCO. On the present theory, WCO is predicted for both subject and object wh-questions when the wh-word is coreferent with the other nominal, because both derivations require the wh-word to move past the other nominal (i.e., both derivations check the [·*wh*·] feature second, making the wh-phrase an inner specifier of *v*). In an agent focus construction, the wh-subject moves past the non-wh-object as in (97), resulting in a WCO violation if the two nominals are coreferent (96c). Object wh-questions are regular transitive derivations, in which the object is the lower specifier of *v*P, and moves past the subject en route to Spec CP. This again results in a WCO violation if the two nominals are coreferent.

(98) jachin$_i$ x-∅-u:-ch'ay ri: r$_{j/*i}$achala:l
who PFV-3B-3A-hit the his/her$_j$-relative
'Who$_i$ did his/her$_{j/*i}$ relative hit?' (Larsen 1987, ex. 25, p. 46)

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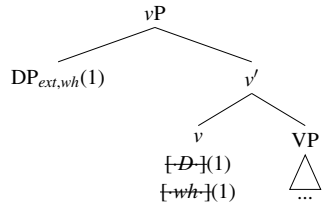
(99) [$_{CP}$ Who$_i$ [$_{TP}$ SetB [$_{VoiceP}$ SetA [$_{vP}$ **his**$_i$ relative [$_{vP}$ ~~who$_i$~~ [$_{VP}$ hit ~~who$_i$~~?
WCO

The present theory therefore correctly predicts an AF derivation to converge only if there is no coreference between the subject and the object. This raises an immediate problem, which is that subject wh-questions like (96a,b) seem like they should never be generated. All else being equal, the syntax predicts subject wh-phrases in (96a,b) to be merged after the object raises, which leads to AF. Subsequent Ā-movement of the subject leads to a WCO violation because it crosses the coreferent object. However, (96a,b) show that it is possible to generate subject questions with regular transitive agreement alignment in this case instead.

A possible explanation for the existence of examples like (96a,b) is to propose that the conditions requiring object movement in subject questions are sensitive to binding needs. So while high-absolutive Mayan languages typically choose the derivation in (49) for subject wh-questions, it can alternatively choose the English-like derivation if the object needs to be bound by the subject. In the English-like derivation for subject questions, repeated below in (48), the external argument merges before any A-movement may take place, checking both features on *v*, and resulting in normal transitive agreement alignment. The suggestion to make this derivation available if the alternative violates WCO has a bit of a look ahead problem, but is in line with a proposal from Coon, Baier, and Levin (2021) that object reconstruction for binding purposes may affect agreement.[6]

(48) Option 1 for subject wh-questions: check both [·*D*·] and [·*wh*·] with the transitive subject



6. While the agent focus construction is obligatory in the contexts and languages that we have been discussing, Stiebels (2006) notes that there is variation regarding which Ā-constructions require it and to what degree it is required (see especially Stiebels' Table 11). For example, some languages require agent focus in every Ā-movement context, while others may only require it in wh-questions, and show optionality in other contexts like focus fronting and relativization. It therefore appears that the English-like derivation for subject-questions is still part of the grammar of many Mayan languages. It is therefore unsurprising that many Mayan languages can utilize the English-like derivation whenever the agent focus construction creates WCO violations.

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Not all languages are like Q'anjob'al in this respect, however. Q'anjob'al rules out AF in (96a,b), while Chuj (another member of the Q'anjob'alan branch) allows AF optionally in (96a,b). Other languages have patterns somewhere in between these two by allowing or requiring AF in one environment but not the other. I propose that this variation can be accounted for if the Mayan languages vary along two parameters: (1) whether they have ways to circumvent crossover effects, and (2) whether bound objects can incorporate onto the verb.

(100) Subject wh-questions when the subject binds the object. (Hou 2013)

Language	Simple reflexive objects	Extended reflexive objects
K'iche', Q'anjob'al	*AF	*AF
Q'eqchi, Jakaltek	*AF	(AF)
Chuj	(AF)	(AF)
Tz'utujil	(AF)	*(AF)

(101) Chuj has optional AF for reflexive and extended reflexive objects (ex. 19, p. 15)

a. Mach ix-∅-s-b'ik' s-k'ap?
who ASP-B3SG-A3SG-wash A3SG-hand
'Who washed his own hands?'

b. Mach ix-∅-b'ik'an s-k'ap?
who ASP-B3SG-wash-AF A3SG-hand
'Who washed his own hands?'

Adverb placement in Chuj suggests that bound objects can sometimes incorporate onto the verb (Coon, Pedro, and Preminger 2014). When Chuj chooses the AF strategy for subject questions, adverbs are permitted between the verb and a reflexive object (102b). When the verb has transitive agreement alignment, however, adverbs may not appear between the verb and the reflexive object, which is explained if the object has incorporated onto the verb in (102a).

(102) AF has consequences for adverb placement in Chuj (Hou 2013, ex. 20, p. 15)

a. Mach s-mak' (*ewi) s-b'a?
who A3SG-hit yesterday A3SG-self
intended: 'Who hit himself yesterday?'

b. Mach mak'-an (ewi) s-b'a?
who hit-AF yesterday A3SG-self
'Who hit himself yesterday?'

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In addition to having optional incorporation of bound objects, Royer (2020) has argued that the distribution of pronounced antecedents to possessive pronouns in Chuj is conditioned in part by linear order rather than solely by structure. His findings show that Chuj somehow manages to avoid crossover effects in other contexts where we should observe them. As a result, expected WCO effects in the agent focus construction appear not to cause a crash in Chuj.

The basic puzzle from Chuj that Royer presents can be found in (103). In general, Chuj is a VOS language, as is evident from (103a) where there is noncoreference between the subject and object. Both the subject and object in this case contain a clitic-like element *ix* inside the noun phrase. In (103b), however, coreference between the subject and object deletes one of the instances of *ix*, which he argues advocates for the demonstrated re-bracketing of the components of each argument. In (103b), Royer argues that the R-expression is pronounced inside the object as a possessor, and the subject is null.

(103) Chuj (ex. 9–11, p. 3)

a. Ix-s-chonh [s-wakax ix] [ix Ana].
PFV-A3-sell A3-cow CLF.PRO CLF Ana
'Ana$_1$ sold her$_{2/*1}$ cow.'

b. Ix-s-chonh [s-wakax ix Ana] [∅].
PFV-A3-sell A3-cow CLF.PRO Ana
'Ana$_1$ sold her$_{1/*2}$ cow.' (Lit. ∅ *sold Ana's cow*)

Adverb tests support the proposed bracketing in (103b). While adverbs can typically appear between the subject and the object, as in (104a), they cannot appear between the R-expression and the apparent object in (104b), which advocates for its treatment as a genuine DP-internal possessor. Thus, there is nothing pronounced in subject position in (104b), despite the translation as a transitive clause with an extended reflexive object.

(104) Adverb placement (ex. 13–14, p. 3)

a. S-b'o' tek (ewi) **waj Xun** (ewi).
A3-make meal (yesterday) CLF Xun (yesterday)
'Xun made the meal yesterday.'

b. S-b'o' s-tek (*ewi) **waj Xun** (ewi).
A3-make A3-meal (*yesterday) CLF Xun (yesterday)
'Xun$_i$ made his$_i$ meal yesterday.' (Lit. ∅ *made Xun's meal yesterday*)

This effect is also observed when a possessed object is wh-moved. The possessor/transitive subject is pronounced inside the wh-phrase instead of in the usual post-verbal subject position.

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(105) [Ha s-mam **waj Xun**] ix-y-il-a'.
FOC A3-father CLF Xun PFV-A3-see-TV
'Xun$_1$ saw *his*$_1$ *father*.' (Lit: ∅ *saw* Xun's father) (ex. 16, p. 4)

(106) *[Ha s-mam] ix-y-il-a' **waj Xun**.
FOC A3-father PFV-A3-see-TV CLF Xun
intended: 'Xun$_1$ saw *his*$_1$ *father*.' (ex. 17, p. 4)

It looks like the only context in which we get to see the transitive subject pronounced separately from the extended reflexive object is in subject wh-questions. With or without AF, the possessor/transitive subject appears preverbally in subject questions, and the extended reflexive object appears post-verbally (101).

(101) Mach ix-∅-s-b'ik' s-k'ap?
who ASP-B3SG-A3SG-wash A3SG-hand
'Who washed his own hands?'

Assuming Royer's structural analysis is right, we must conclude that whatever allows co-construal of the subject and the R-expression inside the object in (103b) and (105) is not sensitive to Condition C or Weak/Strong crossover. If it were, (103b) would be ungrammatical because the R-expression inside the object would violate condition C, and (105) would be ungrammatical because the wh-phrase containing the R-expression would cross its binder, violating Strong crossover. Assuming therefore that Chuj simply does not have crossover effects,[7] wh-movement of a subject across a coreferent object should be allowed, licensing the AF derivation. The agent focus derivation is therefore predicted to be only ruled out in languages that otherwise have crossover effects.

3.4.3 Multiple Fronting

It has been observed that many of these languages have multiple fronting constructions, in which the order of specifiers at CP determines whether subject extraction requires the agent focus construction. SO orders correspond to regular transitive agreement alignment, while OS corresponds to the agent focus alignment: no Set A agreement, AF morphology, Set B targets the object. In summary, whether the subject extracts apparently doesn't govern AF by itself.

7. It is unclear what accounts for Chuj's lack of Condition C and crossover effects in these contexts. We could imagine that something about the representation of pronouns in Chuj is different than in Q'anjob'al, or that the derivational history of objects is different in the two languages, for example. I leave investigation of this topic to future research.

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The order in which the phrases appear in the left periphery is what counts. This generalization holds irrespective of what type of Ā-extraction occurred. Topics, foci, wh-phrases, quantifiers, relative operators, and combinations thereof all demonstrate the same word order-AF interaction.[8]

(107) Multiple fronting: topic+focus (Kaqchikel; García Matzar and Guaján 1997, ex. 468d,f, p. 405; Henderson and Coon 2018, ex. 62–63, p. 22)

a. SOV - no AF
[$_{subj}$Ja ri utiw-a'], [$_{obj}$ja ri aq] x-e-ki-tïj.
FOC DET coyote-PL FOC DET pig PFV-B3PL-A3PL-eat
'(In contrast to) the coyotes, it's the pigs they eat.'

b. OSV - AF
[$_{obj}$Ja ri aq], [$_{subj}$ja ri utiw-a'] x-e-tij-o (kichin).
FOC DET pigs FOC DET coyote-PL PFV-B3PL-eat-AF A3PL.RN
'(In contrast to) the pigs, it's the coyotes that eat them.'

(108) Multiple fronting: existential+wh (Kaqchikel; Erlewine 2016, ex. 29, p. 441)

a. SOV - no AF
Achike k'o x-∅-u-tz'ët?
who ∃ COM-BSG-A3SG-see
'Who saw someone?' (*Who did someone see?)

b. OSV - AF
Achike k'o x-∅-tz'ët-ö?
who ∃ COM-BSG-see-AF
'Who did someone see?' (*Who saw someone?)

(109) Multiple fronting: existential+existential (Kaqchikel; ex. 33, p. 442)

a. K'o k'o x-∅-u-tz'ët
∃ ∃ COM-B3SG-A3SG-see
'Someone saw something.' (*There's something that someone saw)

b. K'o k'o x-∅-tz'et-ö
∃ ∃ COM-B3SG-see-AF
'There's something that someone saw.' (*Someone saw something)

8. A point of clarification about (107b): in their original example, García Matzar and Guaján (1997) report that a relational noun *kichin*, which agrees with the fronted patient, follows the verb. Later, however, Henderson and Coon (2018) report the same example without this relational noun. Robert Henderson, p.c. confirms that the relational noun is optional here (as is indicated in text elsewhere throughout García Matzar and Guaján [1997] as well), so I have reported it as such, citing both papers. For context, the presence or absence of a relational noun on an object has consequences for agreement alignment: when the patient is marked, it does not control agreement, behaving like an oblique.

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(110) Multiple fronting: focus+relative clause (Kaqchikel; ex. 34, p. 442)

a. ri achin ri [ja ri xta Maria x-∅-u-tz'ët]
DET man REL FOC Maria COM-B3SG-A3SG-see
'the man who saw MARIA (but not others)'
*'the man who MARIA (but not others) saw'

b. ri achin ri [ja ri xta Maria x-∅-tz'et-ö]
DET man REL FOC Maria COM-B3SG-see-AF
'the man who MARIA (but not others) saw'
*'the man who saw MARIA (but not others)'

My account has a natural explanation for these facts if we treat the Mayan left periphery as a generalized Ā-position. Assuming that the examples in (107) are derived by true multiple extraction, and that multiple extraction is order preserving (Richards 1997; Davis 2020), we expect the order of specifiers at CP to reflect the order of specifiers at *v*P. The generalization in (107) can therefore be restated as follows.

(111) If the order of specifiers at *v*P is SO, we get transitive agreement; if the order of specifiers at *v*P is OS, we get intransitive agreement and agent focus.

Observe that the generalization in (111) is simply a restatement of the proposal in this chapter that agreement alignment of a transitive clause is sensitive to the order of specifiers at *v*P. The question is, does the proposal predict both possible orders at *v*P given two arguments with Ā-features? The answer is yes, so long as the relevant Mayan languages either (1) have some other feature besides [·*D*·]/[·*wh*·] features that permits an additional Ā-specifier of *v*P, or (2) have a perpetually active [·*wh*·] feature that can be satisfied multiple times.

Before considering these options, recall that the order of specifiers is typically determined in part by whether either argument has a superset of the other's features. When only one of the arguments is a wh-phrase, object wh-questions yield an SO order of specifiers at *v*P because the subject only has D features while the object has both D and wh-features. The subject therefore has to merge first or else it would be blocked by wh-movement of the object. The opposite order of specifiers appears in subject wh-questions because the feature profile of each argument is reversed in that context. A wh-subject has superset of a non-wh-object's features, meaning the subject no longer has to merge first, thus permitting object movement to precede external merge (I proposed that the choice whether to enforce this derivation is a parametric one, subject to crosslinguistic variation).

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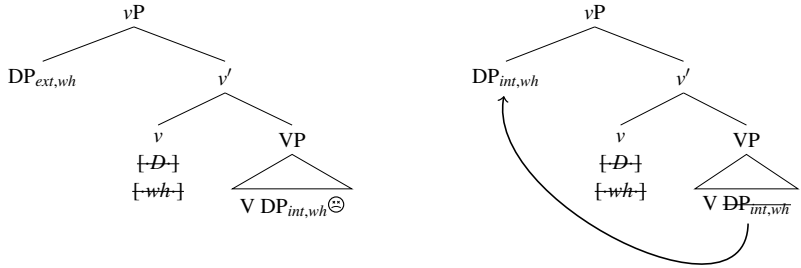
Without any amendments to the theory, this logic should rule out multiple fronting entirely. If *both* the subject and object have both D and wh-features, merging one should block the other. There should therefore only be one wh-specifier of *v*P in a given derivation. On some analyses of Mayan multiple fronting, this conclusion is not entirely unwelcome. There is debate surrounding whether the leftmost phrase in multiple fronting constructions is base generated high vs. derived by movement.

(112) When both S and O are wh-phrases, S has to merge first or it would be blocked by O. However, if S merges, it blocks O for the same reason. The PIC rules out object wh-movement in this context.



Aissen (1992) and Pixabaj and England (2011) have argued for a more articulated view of the K'ichee' left periphery in which the left-most nominal is always topical, and the inner phrase is always focal. They also observe a prosodic break between the two fronted nominals in (107a,b), which they analyze as evidence that the outer specifier (topical phrase) was base generated high rather than internally merged there.

Coon, Baier, and Levin (2021) adopt this view and argue that this conclusion readily predicts the apparent AF-word order interaction. The only moving constituents on this proposal are the inner specifiers of CP. Therefore, multiple fronting constructions with SO word order should pattern with object wh-questions, since the inner specifier object is the only wh-moving element. Similarly, OS word order should pattern with subject wh-questions and thus result in agent focus because the only moving element is the subject.

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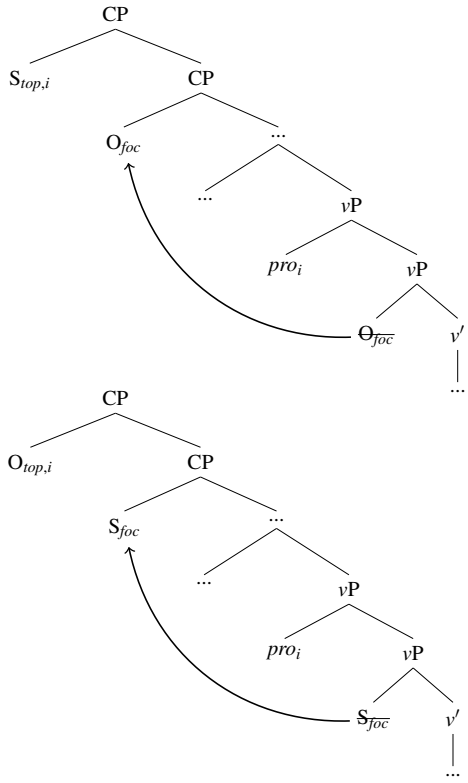
(113) The inner specifier of CP moves from the inner specifier of *v*P because it is the only element that moves to CP, and Ā-elements are always the inner specifier of *v*P in the relevant Mayan languages.



A problem for this approach is the fact that the outer specifiers in multiple fronting constructions appear to be island sensitive in Kaqchikel, suggesting that they have in fact undergone movement and were not base generated high. Erlewine (2016) offers examples (114) and (115), which test this for multiply fronted existentials. In general, long-distance movement of existentials to preverbal positions is possible in Kaqchikel (114). However, when the outer specifier object in (115b) is associated with a position inside a relative clause, the result is ungrammatical. If the object had been base generated high, this sensitivity to the relative clause island would be unexpected. We can additionally be sure that the object is indeed the outer and not the inner specifier in these cases because of the AF morphology on the matrix verb, which only shows up if the multiply fronted elements are in OS order.

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(114) Baseline: Movement of **k'o** from an embedded clause is ok. (Kaqchikel; Erlewine 2016, ex. 23, p. 437)

a. K'o n-∅-noji-n [chin **k'o** yawa'].
∃ INC-B3SG-think-AF that ∃ sick
'Someone thinks that someone is sick.'

b. **K'o** k'o n-∅-noji-n [chin yawa'].
∃ ∃ INC-B3SG-think-AF that sick
'There is someone that someone thinks is sick.'

(115) Movement out of a relative clause island ruled out. (Kaqchikel; ex. 24, p. 438) (Kaqchikel;

a. K'o x-∅-k'ul-ö [ri achin ri **k'o** x-∅-u-tz'ët].
∃ COM-B3SG-meet-AF the man RC ∃ COM-B3SG-A3SG-see
'Someone met the man who saw something.'

b. ***K'o** k'o x-∅-k'ul-ö [ri achin ri x-∅-u-tz'ët].
∃ ∃ COM-B3S-meet-AF the man RC COM-B3SG-A3SG-see
intended: 'There is something$_i$ that someone met the man who saw it$_i$.'

If Erlewine is right that Kaqchikel has genuine multiple extraction, the present theory requires some amendment to permit both Ā-arguments as specifiers of *v*P. I propose that both *v*P and CP are generalized Ā-positions in the sense that topics, foci, wh-phrases and quantifiers can merge there. What allows multiple fronting is the possibility that Ā-Merge-features don't disappear when they get checked, and can thus remain active in order to license other Ā-phrases.

As a result, the order of Merge at Spec *v*P is in principle free, because both arguments are independently licensed by their Ā-features. If the Ā-subject merges first, it checks a [·*D*·] feature, which cannot license any more DPs, and a [·Ā·] feature, which *can* license more Ā-phrases. Similarly, if the Ā-object merges first instead, it checks the same features, which blocks subsequent DPs but permits subsequent Ā-phrases.[9]

9. The possibility of multiple wh-movement to the same position in some languages raises the question of whether we ever see parallel behavior in the domain of A-movement. If what sets Mayan and, for instance, Bulgarian apart is an eternally active [·*wh*·] feature, do any languages have an eternally active [·*D*·] feature? Such a language would presumably allow two DPs to occupy Spec *v*P at the same time without any additional features. It could be that languages with productive object movement or multiple nominative constructions (e.g., Japanese and Korean) have such a feature, though I leave investigation of this possibility to future research.

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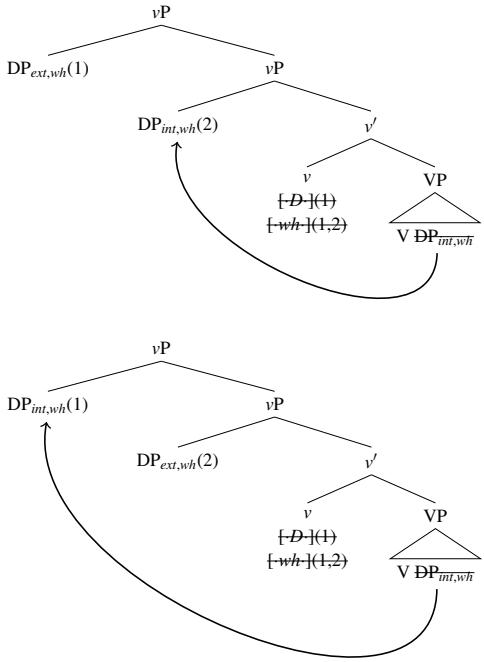
(116) Both orders of operations permit both S and O as specifiers, so neither order is enforced.



In summary, the following ordering requirements on Merge are predicted for high-absolutive Mayan languages given different combinations of arguments:

(117) a. Ā-subject, non-Ā-object: Merge O, then S
b. Ā-object, non-Ā-subject: Merge S, then O
c. Ā-subject, Ā-object: Either order

Notice, however, that in languages that *never* choose option (117a) for subject wh-questions, presumably don't have access to it in scenario (117c) either. We thus expect parametric variation in multiple fronting across languages: those with English-type subject questions should only permit superiority obeying multiple specifiers of CP (i.e., SO, found in, e.g., Bulgarian Richards 1997), those with Mayan-type subject questions should permit superiority violating orders.

In summary, the present proposal accounts for the interaction between agent focus and word order in multiple fronting examples provided that movement

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to the left periphery is to a generalized Ā-position. Additionally, both word orders are predicted to be possible because Ā-elements are always licensed in Spec *v*P, regardless of the order of Merge. What remains to be investigated is how/whether this account covers the proposed focal and topical interpretations discovered by Pixabaj and England (2011). If it is right that the interpretation of a fronted nominal is entirely predictable from its position, this result might lend itself better to a more cartographic view of the left periphery. According to their typology, however, there are four types of interpretations available to fronted nominals, two topical and two focal, which suggests that examples like (107a,b) should be multiply ambiguous. I leave investigation of the full typology to future research.

3.5 Conclusion

The central claim of this chapter is that subject extraction in certain Mayan languages exceptionally promotes the object above the subject, due to the features on *v* and the possible ways of checking them. This derivation was shown to have consequences for agreement, accounting for the unusual morphology found in transitive subject questions.

We additionally investigated several environments in which subject extraction apparently did *not* correspond to exceptional promotion of the object: anaphoric objects, NP objects, and multiple fronting (with SO order). In each of these cases we observed that the canonical Mayan subject extraction derivation was either blocked (due to WCO), not relevant (NP objects never check [·*D*·] features), or optional (multiple fronting).

To summarize, the distribution of AF in high-absolutive Mayan languages was argued to be determined by three things: (1) the order of specifiers at Spec *v*P, (2) the specifications of the φ-probes on Voice and T, and (3) the features of arguments. The only case in which subject extraction was proposed to be ruled out on account of grammatical constraints is when movement violated WCO.

Importantly, the same features on *v* that licensed unexpected morphology when a transitive *subject* wh-moves correctly predicted the absence of such effects in *object* wh-questions. Transitive object wh-phrases behave like regular transitive objects because they must wh-move after the external argument has been merged (or they would not be transitive objects). As a result, wh-objects never block the transitive subject from controlling agreement.

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4 The Distribution of DPs and Non-DPs

We have talked about the distribution of DPs vs. wh-DPs, and how they interact at the edge of *v*P. We will now discuss the processes that build the whole *v*P, not just those that determine how many specifiers it has. I assume that *v*P is built from argument-introducing heads and their arguments, including the verb root. The arguments selected by verbal heads may be DPs, like canonical subjects and objects, or they may be elements of other categories, such as prepositional phrases, embedded clauses, adjectival phrases, or embedded verb phrases.

In this chapter, I propose that the features involved in argument-Merge stand in an entailment relationship: DPs can check a superset of the features that other arguments can. This is achieved if there are only two argument-introducing features available to verbal heads: [·*D*·], which is specified to be checked by DPs, and [·*X*·], which is unspecified for category. While DPs can in principle check both features, non-DP arguments can only check [·*X*·]. Two factors thus constrain the construction of verb phrases: (1) the number of features/functional projections involved, and (2) subset relationships between the elements that check those features.

In what follows, we will see how this approach to verb phrase construction explains many otherwise puzzling facts about the syntax of the verbal domain crosslinguistically. I will argue that we only need two argument-introducing verbal categories in the functional hierarchy (V and *v*), each of which has two argument-introducing features: one for licensing DPs and one for licensing any argument ([·*X*·]). In addition, the higher head has a clause-building feature that enables it to merge with the lower one ([·*V*·]). These two categories and their features can generate a wide range of structural contexts, which can support the wide range of lexical verbs that languages have. Moreover, the syntax imposes an implicit constraint on the lexicon (K. Hale and S. J. Keyser 1993; Ken Hale and Samuel Jay Keyser 2002; Borer 2005; Pylkkänen 2008; Ramchand 2008; and Wood and Marantz 2017, among others)—lexical verbs

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whose s-selectional requirements exceed the capacity of verbal categories' structure-building features cannot exist.

This proposal will be shown to predict both general and specific facts about verb phrase syntax. In general, though verbs vary considerably in their meaning, and the kinds of arguments that verbs can select for can likewise vary in category and meaning, verb phrases don't show that much structural variation within and across languages. Clauses tend to have at most two "core" arguments, which are usually represented as DPs. Additional arguments ("non-core" arguments) often surface either as non-DPs, or as inherent case-marked DPs, which are often analyzed as prepositional phrases (Lamontagne and Travis 1987; Bittner and Hale 1996; Neeleman and Weerman 1999; Rezac 2008; Caha 2009; D. Pesetsky 2013; and T. Levin 2015, among others). Alternatively they may surface as DPs if additional morphology has been added to the verb, representing additional functional structure. Lastly, the total number of arguments that a verb phrase can have usually does not exceed four (before having to add additional verb roots), where DPs tend to surface further to the left in the clause compared to non-DP arguments. The proposed number of features and the emergent structural restrictions on the distribution of DPs vs. non-DPs explain these general properties of the verbal domain.

More specifically, the proposal makes especially surprising predictions whenever *v* merges with a non-DP argument, such as a prepositional phrase. Since *v* typically also merges with both a DP and a VP, having an additional non-DP argument creates two entailment relationships between elements that *v* needs to merge with: (1) VP vs. non-DP, and (2) DP vs. non-DP. We will see that the constraints on structure outlined in chapter 2 predict VP to become a specifier in these contexts, which has consequences for c-command relationships between arguments of V vs. *v*. These unexpected predictions will be shown to resolve long-standing puzzles about binding and A-movement in the dative alternation. However, they will also require a slight amendment to binding theory, outlined in section (4.3.1). I propose that in order to understand the full range of binding profiles in different structural contexts, binding principles must reference a maximal notion of command, as well as c-command.

4.1 Two Verbal Categories

The proposals about Merge features outlined in chapter 2 constrain the number of arguments a head can select for. Because a single element can check multiple features, only one element per category could ever be c-selected by a given head. Attempting to license more arguments of the same category by adding

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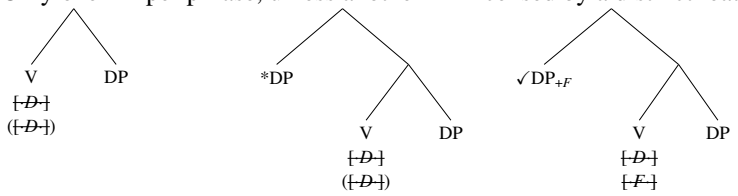
additional Merge features for that category will not license more arguments—the first-merged element of that category will check every feature it can. The only way a second element could be licensed is if it had another feature besides its category feature that was also represented as a Merge feature on the verb.

(118) Only one DP per phrase, unless another DP licensed by a distinct feature



So far, this proposal is in keeping with proposals like that advanced by Borer (2005), Pylkkänen (2008), Ramchand (2008), Bowers (2010), and Wood and Marantz (2017), among others, who suggest that only one argument is licensed per functional projection in the verb phrase. Where my proposal diverges, however, is in how I treat arguments that are *not* DPs.

Verbs do not only select for DPs as arguments, but also CPs, TPs, PPs, APs, and so on. I will argue that even though these non-DP arguments are still syntactically *arguments* rather than adjuncts, they are not merged in response to dedicated [·*C*·]/[·*T*·]/[·*P*·]/[·*A*·] features. Instead, I propose that they are licensed by a Merge feature that is *unspecified* for category (labeled [·*X*·] here). On the present approach, there are only two argument-introducing features from the perspective of syntax: one for DPs and one for any argument. Thus, all imaginable arguments are *permitted*, but not all imaginable arguments are explicitly subcategorized for.

(119) Arguments of V licensed by [·*D*·] and [·*X*·]:
- a. Jo enjoys fruit. (DP object, licensed by [·*D*/*X*·])
- b. Amy turned blue. (AP object, licensed by [·*X*·])
- c. Beth depends on Lauri. (PP object, licensed by [·*X*·])
- d. Meg wants to go camping. (TP object, licensed by [·*X*·])
- e. Jo thinks that Marmie likes carrots. (CP object, licensed by [·*X*·])
- f. Meg introduced Jo to Lauri. (DP+PP objects, licensed by both)
- g. Amy told Beth that Marmie likes carrots. (DP+CP objects, licensed by both)

The introduction of an unspecified feature has an important consequence for the order of operations: the fact that DP is itself a kind of XP induces restrictions on the relative order in which DPs and non-DPs are merged. If a DP is merged

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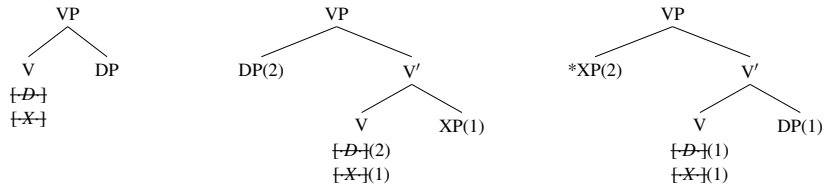
first, no other arguments are licensed in that projection due to the fact that Feature Maximality requires that DP to check both [·*D*·] and [·*X*·]. However, if a non-DP is merged first, it only checks [·*X*·], allowing a DP to be merged later. Thus, a VP can potentially host *two* arguments, so long as only the second one is a DP. For convenience, I will call this ordering restriction *The non-DP first theorem*.

(120) *The non-DP first theorem*: If V merges with a non-DP, it must merge first.



Since only one DP is licensed per functional projection, we need a second verbal head to build a transitive clause (R. Larson 1988; K. Hale and S. J. Keyser 1993; Chomsky 1995; von Stechow 1995, a.o.). By convention, I will call the second verbal head *v*, which is proposed to be like V in having the two argument-licensing features ([·*D*·] and [·*X*·]), and unlike V in additionally having a [·*V*·] feature, so *v* can merge with VP (necessary for clause construction).[1] I propose that these two heads, V and *v*, and these three features, [·*D*·], [·*X*·], and [·*V*·], are the only ingredients we need to derive all and only the verb phrases that we find.

(121) Features for each verbal category
  a. V = [·*D*·], [·*X*·]
  b. *v* = [·*D*·], [·*X*·], [·*V*·]

An important consequence of this proposal is that it predicts a surprising interaction between non-DP arguments of *v* and the position of VP. When *v* takes a VP complement, merging VP necessarily checks *v*'s [·*X*·] feature in the same way that merging a DP would check its [·*X*·] feature. As a result, whenever *v* takes a non-DP argument (e.g., potentially the experiencer subject in (122a), the dative/applied argument in (122b), or the *by*-phrase in (122c), as in Collins [2005]), VP must merge as a *specifier*.

1. I use the labels V and *v* to refer to the categories responsible for introducing internal vs. external arguments respectively. These labels vary on different theories—one could imagine replacing V with the label $v+\sqrt{}$ and *v* with the label *Voice* without changing any fundamental aspects of the theory. Whether we think that verbs are built from category-less roots plus a categorizing head *v* or are lexically endowed with their syntactic category doesn't affect the central predictions of the present theory, assuming that Merge features are associated with syntactic categories.

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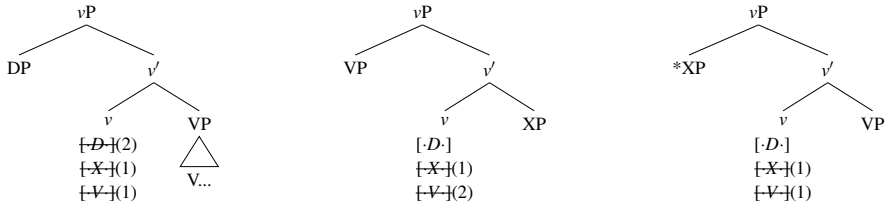
(122) *v* can host an XP argument as well as VP.

a. It seems to Beth that Jo likes writing.

b. Meg bet Amy.DAT a day's pay that Jo would lose her scarf.

c. A book was given to Meg by Jo.

(123) *v*Ps: A non-DP/non-VP must merge first → makes VP a specifier.



The fact that VP is predicted to be a specifier in these contexts should affect constituency, binding between different arguments, and locality from the perspective of A-movement and Agree. Before discussing these predictions, however, I want to motivate the present proposal by discussing properties of selection that I believe are not accounted for by alternative proposals.

4.1.1 Why [·*D*·] and [·*X*·]?

I have argued that there are only two features involved in argument-Merge, [·*D*·] and [·*X*·]. In a first result, this explains why the profile of selection for DPs looks like c-selection in the standard sense, while the profile of selection for other categories does not (Jane Grimshaw [1979]; D. M. Pesetsky [1982]; and Elliott [2017]). C-selection for DPs is shown in (124). Here we see that verbs that take DP complements are not particular about which D head is used, so long as the complement is *some* kind of DP.

(124) C-selection for category D:

a. Sue devoured **the** cake.

b. Sue devoured **a** cake.

c. Sue devoured **three** cakes.

d. Sue devoured **cake** (for three minutes).

e. Sue devoured **Sally's** cake.

f. Sue devoured **every** cake.

Clausal and prepositional complements, by contrast, do not exhibit this profile. We don't find verbs that select for a PP/CP, which care *only* about their complement being *some* kind of prepositional phrase/clause. Instead, the distribution of PPs and CPs appear to be determined by semantic and lexical factors. Many verbs that select for clausal complements can alternatively take nominal

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or prepositional complements (125)–(126), and verbs that select for PPs without semantically selecting them always seem to be particular about *which* P heads their complement (127) (D. Pesetsky 1995, p. 246, fn. 86, citing Donca Steriade p.c.). Without positive evidence for a feature [·*P*·] or [·*C*·] that can be checked by *any* PP or CP, it would be ad hoc to propose that verbs ever bear such features.

(125) Elliott (2017, ex. 150, p. 96)
  a. Sam promised/said/explained/thought that he would give an extra lecture.
  b. Sam promised/said/explained/thought something.

(126) (based on examples in Jane Grimshaw [1979]; D. M. Pesetsky [1982])
  a. Sue asked whether Bill likes carrots.
  b. Sue asked the time.
  c. Sue asked for the salt.

(127) L-selection for particular P-heads (based on D. Pesetsky [1995, p. 246, fn. 86], citing Donca Steriade p.c.)
  a. Sue relies **on/*to/*of/*for the bus**.
  b. Sue bristled **at/*to/*of/*for Sally's insult**.

A second advantage of replacing non-D Merge features with [·*X*·] is as follows. If features have to be fixed for a given category, assigning the category V features [·*D*·] and [·*P*·] would automatically rule out verbs that take clausal rather than prepositional complements. Thus, without [·*X*·], we would need to endow the category V with every imaginable feature (e.g., [·*P*·], [·*C*·], [·*A*·], [·*T*·]...) to make it flexible enough to host the range of arguments that V can have. Doing so should allow verb phrases to contain more arguments simultaneously than we actually find, however. While it is common to find verbs with two internal arguments, I have never found a verb that selects for four, where each is a different category, as in (128c). According to K. Hale and S. J. Keyser (1993), Ken Hale and Samuel Jay Keyser (2002), and Juarros (2003), the number of arguments per verbal head is maximally two crosslinguistically.

(128) a. Beth told [Lauri] [about syntax]. (D+P)
  b. Jo told [Marmie] [that Beth likes carrots]. (D+C)
  c. *Jo told [Marmie] [blue] [about syntax] [that Merge is a structure-building operation]. (D+A+P+C)

Lastly, if PPs and CPs were introduced by features like [·*P*·] and [·*C*·], we would have no expectations about the relative positions of DPs vs. PPs/CPs selected by a common head. We would expect it to be possible to find verbs where the DP merges first, and the PP second, and verbs with the reverse order

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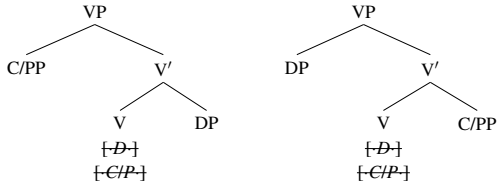
of feature-checking. Each order of Merge should correspond to a different word order. However, (130) shows that only one relative order of DP vs. PP is allowed (even if we make the DP really heavy), showing that only one order of Merge is allowed.

(129) The two kinds of VPs if we replace X with C or P



(130) a. I told (*about syntax) Lauri's favorite poet's cat (about syntax).
b. I promised (*to eat a carrot) Marmie's mother's friend Ed (to eat a carrot).
c. I told (*that the world is round) Beth's nephew's stuffed animal (that the world is round).

The facts in (130) suggest that we either need to stipulate constraints on the possible orders of feature-checking or conclude that non-DP arguments are introduced by [·*X*·]. On this approach, features are unordered on V, but one of V's features is unspecified, which requires it to be checked first in the course of a derivation. Thus, the proposed distribution of [·*X*·] straightforwardly explains facts about word order that are lost on alternative views of the inventory of argument-introducing features.

We could alternatively imagine that the examples in (130) do not reflect the order of Merge but rather reflect conditions on linear order. For example, Stowell (1981) argues that the position immediately following the verb is a case position. Since DPs need case, but PPs/CPs do not (or can't have case), the only available word orders for DP and non-DP arguments are those in which DPs are adjacent to the verb in their clause, and other arguments show up further to the right.

In addition to much recent work offering new perspectives on case and adjacency requirements, head final languages argue against Stowell's approach and in favor of the present one. In a head final language, the verb shows up to the right of all of the arguments. If DPs' position relative to verbs were driven by case rather than order of Merge, head final languages would order DPs to the *right* of non-DPs in order to appear next to the verb. If their linear order were conditioned by order of Merge, however, the position of DPs relative to non-DPs would be the same, irrespective of the headedness of VP. In fact, the order of DPs relative to non-DPs appears to be the same in Dutch as in English.

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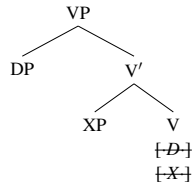
(131) *Dutch* (Stowell 1981, ex. 27, pp. 116–117, from Koster 1978b)

a. ... dat Peter [John] [naar Amsterdam] stuart
... that Peter John to Amsterdam sends
'that Peter sends John to Amsterdam'

b. ... dat John [Peter] [ziek] maakte
... that John Peter sick makes
'that John makes Peter sick'

On my approach, this result is expected because head-finality switches the relative order of V and its complement but not its specifier. Assuming that non-DPs Merge first, and are thus complements, they should show up immediately preverbally in a head final language, while the second-Merged DP appears further to the left.

(132) Head-final VP with DP and XP



I therefore conclude that there are no argument-introducing features beyond [·*D*·] and [·*X*·] on verbal heads. In addition to there not being strong evidence for features like [·*P*·] and [·*C*·], both the number and distribution of non-DP arguments are better explained by [·*X*·]. The predictions of the approach are summarized in (133).

(133) Conditions on the orders of operations:

a. DPs are always licensed → can be merged at any time.

b. non-DPs are only licensed if merged first → can only be complements of V and *v*.

c. *v* can't take both a VP and a non-DP complement → non-DP arguments of *v* force VP to become a specifier.

Before moving on, I want to clarify the scope of the non-DP first theorem. The non-DP first theorem states that if a DP and a non-DP are both introduced by the same verbal head, the non-DP must merge first. The complement-specifier asymmetry thus ensures that the DP will precede the non-DP, if both remain in their underlying positions. This is not to say that DPs always precede non-DPs in a string, however. If the non-DP is attracted by some higher head, it may of course surface to the left of the DP. Alternatively, if the two arguments are introduced by different heads, one could imagine configurations

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in which a non-DP ends up preceding a DP. We will see several such cases in the subsequent sections and chapters, for instance, when we discuss the dative alternation and wh-movement of indirect objects.[2]

4.2 The Space of Possible *v*Ps

The proposed inventory of functional heads and Merge features predicts verb phrases to have anywhere from 0 to 4 arguments. If a clause wants to project more than four arguments, it must use one of the [·*X*·] features on V or *v* to merge another verb phrase or clause. The space of possible verb phrases, varying the number and types of arguments introduced by each verbal head, are shown in (134).

(134) Possible numbers/types of arguments in *v*P

arguments in V→ arguments in *v* ↓	∅	DP	XP	DP+XP
∅		1DP	1XP	1DP,1XP
DP	1DP	2DPs	1DP,1XP	2DPs,1XP
XP	1XP	1DP,1XP	2XPs	1DP,2XPs
DP+XP	1DP,1XP	2DPs,1XP	1DP,2XPs	2DPs,2XPs

Both of the extremes are attested—*weather* verbs take no arguments, instantiating the top left quadrant (135), and verbs of *betting* take four (136), instantiating the bottom right quadrant. As long as we treat one of the arguments of *bet* as a dative/applied argument (which is housed in an ApplP/PP—to be discussed in §4.3), the predictions of the theory are therefore borne out—we can have verbs with up to four arguments, at most two of which are DPs.

(135) *Weather* verbs select for no arguments
  a. It's raining.
  b. It's snowing.

(136) Verbs of *betting* select for four arguments
  a. Bugs bet Tweety.DAT 7 dollars that Road Runner would escape.

2. The idea that non-DPs might move to higher positions immediately raises the question of what kinds of features might attract them, given that the claim that they are base-merged in response to [·*X*·]. In wh-questions, the answer is clear: non-DPs might have wh-features, which can be targeted by higher heads. The answer is less clear when we consider non-DP subjects, whose interactions with other aspects of clausal syntax differ from that of DP subjects, leading to some uncertainty about their landing sites and movement properties. See, for example, Bresnan (1994) and Koster (1978) for some early discussion of PP and sentential subjects, respectively.

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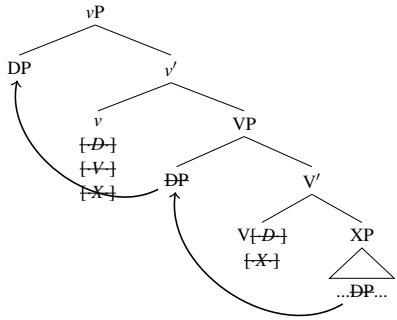
b. Bill wagered me.DAT a day's pay that the world would end on Wednesday. (D. Pesetsky 1995, ex. 478)

c. %Bill sent Mary.DAT a letter to London.

Though I won't look at examples from every quadrant in (134), a few points are worth highlighting. First, a welcome and unsurprising result: the fact that either/both V and *v* can select a DP predicts unaccusative, unergative, and transitive clauses straightforwardly. If V merges with a DP, but *v* does not, the result is an unaccusative clause; the reverse yields an unergative clause; if both features are used to introduce DPs, the result is a transitive clause.

A second and more surprising result comes from the fact that either/both V and *v* can select a *non-DP* as well, which predicts different raising behaviors. Suppose that V merges with a clause but no DP argument. In this context, some element inside the clause can raise to the edge of VP to check its unused [·*D*·] feature. Depending on whether *v* externally merges a DP, the raised element might stay in Spec VP (as in active ECM clauses), or may raise all the way to Spec *v*P (as in passive ECM clauses).

(137) XP is selected by V (i.e., XP is V's complement)



(138) ECM results from raising to check V's [·*D*·] feature

a. Amy believes Jo to be talented/it to be raining.

b. Jo was believed to be talented. *passive*

Assuming that *v* may in principle merge with a clause as well, licensed by *v*'s [·*X*·] feature, a different raising profile is expected. Here, raising from that clause can check the [·*D*·] feature only on *v*, not V, because raising to check the [·*D*·] feature on V would require movement to a non-c-commanding position. As such, verb phrases in which a clause merges with *v* should only exhibit raising to subject, never raising to object. This raising profile is exhibited by *wager*-class verbs (Postal 1974). In (140), we see that raising only takes place from the clausal complement of *wager/allege* in the passive, that is, when there

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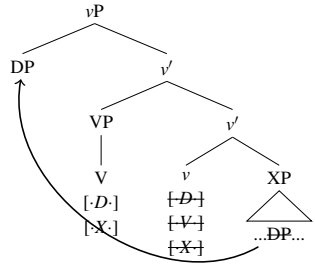
is no external argument—there is no raising to object in an active clause. This is predicted if the clausal complements of *wager/allege* merge with *v*; only *v*'s [·*D*·] feature is available for checking by raising, and only if no external argument is merged.

(139) XP is selected by *v* (i.e., XP is *v*'s complement so VP is a specifier)



(140) *Wager*-class verbs

a. *Amy wagers Beth to be the best pianist.
b. Beth was wagered to be the best pianist.
c. *Jo alleged Meg to be the best actress.
d. Meg was alleged to be the best actress.

Lastly, clauses with two DPs and one non-DP occupy two quadrants in the table in (134), which will form the basis of our discussion of ditransitive clauses in section 4.3. The table in (141) provides suggested names for every predicted structure.

(141) Ascribing names to each structure.

args in V→ args in *v* ↓	∅	DP	XP	DP+XP
∅	*weather* verbs	unaccusatives	raising verbs	ditransitive unacc.
DP	unergatives	transitives	ECM verbs	**ditransitives**
XP	raising verbs	*puzzle/delight*	*seem/appear*	*find*
DP+XP	*wager*	**ditransitives**	*hear*	*bet*

A note on thematic roles: this section focuses on the categorial properties of arguments rather than their thematic properties. As I will discuss more extensively in chapter 6, multiple views on theta role assignment are compatible with the present view of argument-Merge. I have been assuming that DP arguments of V are canonical "objects" (e.g., patients and themes), and DP arguments of *v* are canonical "subjects" (e.g., agents and causers). This could be achieved in either of two ways: (1) with linking rules that map DP arguments of V vs. *v* to particular thematic roles (UTAH), or (2) by assuming that the inventory of

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heads that merge in V vs. *v* are semantically distinguishable according to what thematic roles they assign to their arguments, as proposed by Kratzer (1996); Pylkkänen (2008), and Ramchand (2008), for example. In that sense, the theory of DP-Merge that I advance doesn't decide between different theories of theta-role assignment.

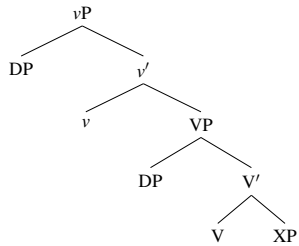
For non-DP arguments, the picture is slightly different. I assume that non-DPs are unlike DPs in that they neither need nor get assigned thematic roles from V or *v*.[3] Non-DP arguments are therefore not expected to interact with theta role assignment for DPs. If the non-DP argument is s-selected, as long as the order of argument s-selection is specified to interpret the non-DP before the DP argument, theta-role assignment will proceed as usual. If the non-DP argument is not s-selected, I assume it must be interpreted via either predicate modification or event identification (Kratzer 1996), neither of which disrupt s-selection.

4.3 The Dative Alternation

On the present approach, there are only two verbal categories, each of which has one [·*D*·] feature. If a clause wants to introduce a third DP argument, it must therefore also have a third argument-introducing head, which can be merged in the main clause by checking the [·*X*·] feature on V or *v*. Depending on whether that extra phrase merges with V or *v*, two possible clause structures are predicted, shown in (142). Importantly, because the element that checks [·*X*·] must be the complement of whatever phrase it merges in, one of these structures breaks the complementation relationship between *v* and VP—non-DP arguments of *v* force VP to merge as a specifier.

(142) Two ditransitive structures

a. XP is V's complement



3. DPs inside non-DP arguments are assumed to get their theta roles from the functional projections internal to the non-DP phrase.

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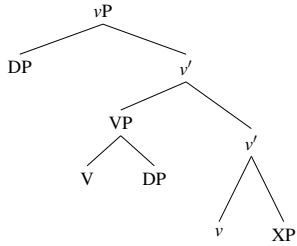
b. XP is *v*'s complement



The fact that VP merges as a specifier in one of these contexts raises the immediate question of where the verb is pronounced. I will largely put aside discussion of verb position until section 4.3.2, where I present evidence from ellipsis showing that verbs in ditransitive clauses are pronounced in a higher position than *v*P. For the sake of having a rule of verb placement at this point in the discussion, I adopt the proxy pronunciation rule in (144) for languages like English, which requires pronunciation of the verb in its leftmost position (i.e., to the left of both internal arguments). The main focus of this section will be on the distribution of internal arguments in the dative alternation rather than the position of the verb, however.

(143) English Dative alternation
  a. Elmer gave a fake present to Bugs.
  b. Elmer gave Bugs.DAT a fake present.

(144) **English verb pronunciation rule**
Pronounce the verb in either V or *v*, whichever is further to the left.

Before discussing the structures in (142), we must also address the pronunciation of the indirect object. Assuming that the head introducing the indirect object assigns its theta role, the XP containing the indirect object can in principle merge with either V or *v* without affecting the interpretation of the clause. Nonetheless, English indirect objects have two different morphological realizations—the prepositional phrase in (143a) or the unmarked indirect object in (143b) (labeled with dative case for expository purposes). Even though there is no overt morphology on the indirect object in (143b), I follow M. Baker (1988), den Dikken (1991), and Pylkkänen (2008), a.o. in assuming that a covert head accompanies it, such as a K head or an applicative head, causing its distribution to be that of a non-DP rather than a DP. I propose that the pronunciation of this head in English is conditioned by word order, following T. Levin (2015) and Branan (2022), who argue that inherent case is subject to adjacency conditions. The rule in (145) states that a covert case head must be linearly adjacent to the pronounced verb. Indirect objects that are adjacent

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to the verb therefore appear unmarked, because their introducing head goes unpronounced. Indirect objects that are not adjacent to the verb, however, must look like prepositional phrases, because X must be overtly pronounced as a preposition in that context.

(145) **English inherent case rule**: The head that introduces indirect objects is realized as null when linearly adjacent to the verb, and as an overt preposition otherwise

Pronunciation rules like (145) are expected to vary crosslinguistically. Some languages might always pronounce indirect objects without a preposition, regardless of word order, while others might always require an overt preposition, regardless of word order. Still others might pronounce X on the verb if X either head moves or incorporates onto V or *v*. This section discusses evidence from binding that the two structures in (142) are utilized repeatedly across languages, even when pronunciation of the indirect object varies from language to language, which motivates the present proposal to separate discussion of structure from discussion of morphology on the indirect object.

With the two pronunciation rules in (144) and (145), I argue that the dative alternation as we know it reduces to two facts about ditransitive clauses: (1) their structural ambiguity (on account of the two positions available to XPs), and (2) the word order flexibility introduced by VP-specifier-hood. I propose that when VP is a specifier, it can be projected either as a rightward or leftward specifier. The fact that VP is a more clause-like specifier than a DP might account for its more flexible linear distribution, depending on whether a language has a mechanism for linearizing heavy specifiers differently than lighter ones (for example, by simply projecting VP as a rightward specifier or by extraposing it like a clausal argument). The linear position of VP affects pronunciation of the indirect object—when VP is on the right, the verb is pronounced in *v*, which leads to non-pronunciation of the X head that introduced the indirect object.

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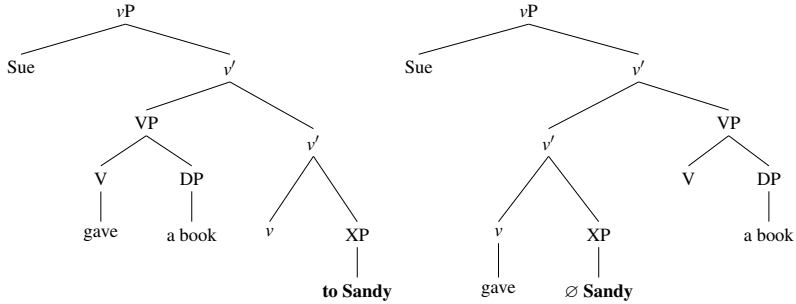
(146) VP position affects word order



In sum, if the indirect object is an argument of V [as in (142a)], it can only be linearized to the right of the direct object; if the indirect object is an argument of *v* [as in (142b)], it can be linearized either to the left or the right of the direct object, depending on how the VP-specifier is linearized. As a result, (143a), repeated in (147a), is proposed to be structurally ambiguous[4] (the indirect object can merge with V or *v*) but (143b), repeated in (147b), is not (the indirect object must merge with *v*).

(147) English Dative alternation

a. Elmer gave a fake present [$_{XP}$to Bugs]. (XP is the complement of V or *v*.)

b. Elmer gave [$_{XP}$ ∅ Bugs] a fake present. (XP is the complement of *v*.)

When the indirect object XP phrase is the complement of V, it is asymmetrically c-commanded by the direct object. When the indirect object XP phrase is the complement of *v*, however, neither argument c-commands the other. This proposal therefore makes a clear prediction about binding possibilities in ditransitive clauses. When the direct object linearly precedes the indirect object, there are two structures available, one in which DP may bind XP and one in which it may not. If there are ways of controlling for structure in cases of ambiguity, they should track whether the direct object can bind the indirect object. By contrast, when the direct object linearly *follows* the indirect object, the direct object should never be able to bind the indirect object. These predictions are summarized in (148).

(148) Predicted interaction between word order and structural ambiguity

a. DP V DP XP. (DP can or cannot bind XP.)

b. DP V XP DP. (DP cannot bind XP.)

4. Janke and Neeleman (2005) also propose a theory of ditransitives in which PP indirect objects are structurally ambiguous, though their proposed structures are different.

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I propose that the interaction in (148) is straightforwardly observed in English (149) if we assume that arguments of *v* can bind arguments of V (to be elaborated on in section 4.3.1). To foreshadow, I propose that we adopt a notion of m-command, which decides on binding possibilities when there is no c-command. With this in mind, observe in (149) that when the indirect object (XP) *follows* the direct object (DP) in (149a,b), the direct object can either bind or be bound by the indirect object. When the indirect object (XP) *precedes* the direct object (DP) in (149c,d), the indirect object can bind the direct object but not vice versa.

(149) a. Jo showed [$_{DP}$Lauri and Amy$_i$] [$_{XP}$to each other's$_i$ parents] in the mirror. (DP binds XP)

b. Jo showed [$_{DP}$pictures of each other$_i$] [$_{XP}$to Lauri and Amy$_i$]. (XP binds DP)

c. Jo showed [$_{XP}$∅ Lauri and Amy$_i$] [$_{DP}$each other$_i$'s parents] in the mirror. (XP binds DP)

d. *Jo showed [$_{XP}$∅ each other$_i$'s parents] [$_{DP}$Lauri and Amy$_i$] in the mirror. (*DP binds XP)

This pattern is not unique to English but is also observed in Japanese, Greek, and Spanish. To clarify the predictions of this account, the English-like word order/structural ambiguity interaction is predicted to be the baseline behavior for ditransitive clauses across languages: DP-XP order is structurally ambiguous while XP-DP order is not. To the extent that languages' dative alternations diverge from this pattern, they should do so in a *more restricted* fashion. For example, Spanish only permits one of these word orders for some reason, namely DO-IO, which shows the same structural ambiguity that we find in the other languages.

Starting with the baseline pattern, observe that Japanese ditransitives are like English relative to binding diagnostics (Hoji 1985; Takano 1998; Yatsushiro 2003; Miyagawa and Tsujioka 2004). Japanese uniformly marks its indirect objects with dative case, and the dative argument can appear to the right or to the left of the accusative argument. When the dative argument follows the accusative argument, it can bind or be bound by the accusative argument. When it precedes the accusative argument, however, the dative argument must bind the accusative one.

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(150) *Japanese* binding in DO-IO order: forward and backward

a. (?)John-ga [Hanako-to Mary]-o$_i$ (paatii-de) otagai$_i$-ni
John-NOM [Hanako-and Mary]-ACC (party-at) [each.other]-DAT
syookaisita.
introduced
'John introduced Hanako and Mary to each other (at the party).'
(Miyagawa and Tsujioka 2004, ex. 61b, p. 24)

b. John-ga [otagai$_i$-no sensei]-o (paati-de) [Hanako-to
John-NOM [each.other-GEN teacher]-ACC (party-at) [Hanako-and
Mary]-ni$_i$ syookaisita.
Mary]-DAT introduced
'John introduced each other's teachers to Hanako and Mary (at the party).' (p.c. Shigeru Miyagawa)

(151) *Japanese* binding in IO-DO order: only forward

a. John-ga [Hanako-to Mary]-ni$_i$ [otagai$_i$]-o syookaisita.
John-NOM [Hanako-and Mary]-DAT each.other-ACC introduced
'John introduced Hanako and Mary to each other.' (ex. 61a, p. 23)

b. *John-ga [otagai$_i$-no sensei]-ni [Hanako-to Mary]-o$_i$
John-NOM [each.other-GEN teacher]-DAT [Hanako-and Mary]-ACC
syookaisita.
introduced
intended: 'John introduced Hanako and Mary to each other's teachers.' (p.c. Shigeru Miyagawa)

Greek ditransitives exhibit the same pattern as English and Japanese. Greek ditransitives are English-like in having both a prepositional variant for indirect objects (152a) as well as a non-prepositional variant (152b). Greek is also like Japanese in using overt inherent case to mark the non-prepositional variant. Greek is unlike English and Japanese, however, in that it also has optional clitic doubling (152c). Importantly, Greek exhibits the same word order/binding interaction: When the indirect object follows the direct object, binding is flexible; when the indirect object precedes the direct object, binding is rigid (Anagnostopoulou 2003, Sabine Iatridou, p.c.).

(152) *Greek* ditransitives

a. O Gianis estile to grama s-tin Maria.
the Gianis.NOM sent.3SG the letter.ACC to-the Maria.ACC
'John sent the letter to Mary.' *prepositional indirect object*
(ex. 5, p. 9)

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b. O Gianis estile tis Marias to grama.
the Gianis.NOM sent.3SG the Maria.GEN the letter.ACC
'John sent Mary the letter.' *genitive indirect object*
(Anagnostopoulou 2003, ex. 7, p. 9)

c. **Tu** edhosa tu Giani to vivlio.
cl.GEN gave.1SG the Gianis.GEN the book.ACC
'I gave John the book.' *with clitic doubling*
(ex. 18, p. 15)

(153) *Greek* binding in DO-IO order (Sabine Iatridou, p.c.)

a. O Gianis edhikse [ton Maria]$_{DP}$ [s-ton eafton tis]$_{XP}$ s-ton
the Gianis.NOM showed the Maria.ACC to-the REFL.ACC GEN in-the
kathrefti.
mirror.ACC
'John showed Mary to herself in the mirror.'

b. O Gianis edhikse [ton eafton tis]$_{DP}$ [s-tin Maria]$_{XP}$ s-ton
the Gianis.NOM showed the REFL.ACC GEN to-the Maria.ACC in-the
kathrefti.
mirror.ACC
'John showed herself to Mary in the mirror.'

c. O Gianis edhikse [tis Marias]$_{XP}$ [ton eafton tis]$_{DP}$ s-ton
the Gianis.NOM showed the Maria.GEN the REFL.ACC GEN in-the
kathrefti.
mirror.ACC
'John showed Mary.GEN herself in the mirror.'

d. *O Gianis edhikse [tu eaftu tis]$_{XP}$ [tin Maria]$_{DP}$ s-ton
the Gianis.NOM showed the REFL.GEN GEN the Maria.ACC in-the
kathrefti.
mirror.ACC
intended: 'John showed herself.GEN Mary in the mirror.' (speaker
intuition: extreme word salad)

In sum, we find that three different languages, each with slightly different morphosyntactic realizations of direct and indirect objects, all show the same interaction between binding and word order in their ditransitive clauses. When the indirect object follows the direct object, both forward and backward binding are possible, but when the indirect object precedes the direct object, only forward binding is possible.

Not every language patterns like English, Japanese, and Greek. Spanish, for example, only makes use of one word order for its ditransitives. In Spanish,

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direct objects always *precede* indirect objects. Like Greek, Spanish indirect objects may be optionally clitic doubled (as can certain direct objects). The indirect object also always appears with a preposition/case marker *a*.

(154) *Spanish* (Anagnostopoulou 2003, ex. 19, p. 16, citing Jaeggli [1982: 12-13])

Miguelito (le) regaló [un caramelo]$_{DP}$ [a Mafalda]$_{XP}$.
Miguelito CL.DAT gave a candy *a* Mafalda

'Miguelito gave Mafalda a piece of candy.'

Even though Spanish does not have variable word order, the word order available to it is in principle predicted to be structurally ambiguous: when the direct object precedes the indirect object, we have seen that binding should be variable. This prediction is borne out, as argued by Demonte (1995) and Cuervo (2003). What we find is that clitic doubling disambiguates the structural ambiguity of direct object-indirect object word order. Clitic doubled indirect objects are arguments of *v*, while non-clitic doubled indirect objects are arguments of V.

(155) *Spanish* binding: Clitic-doubled IOs are arguments of *v*; non-clitic-doubled IOs are arguments of V (Demonte [1995], ex. 9, p. 10)

a. El tratamiento psichoanalítico reintegró [a María]$_{DP}$ [a
the therapy psychoanalytic gave-back to Mary.DO to
sí-misma]$_{XP}$.
herself.IO
'The psychoanalytic therapy helped Mary to be herself again.'

b. *El tratamiento psichoanalítico reintegró/devolvió [a sí-misma]$_{DP}$ [a
the therapy psychoanalytic gave-back to herself.DO to
María]$_{XP}$.
Mary.IO
intended: 'The psychoanalytic therapy helped Mary to be herself again.'

c. *El tratamiento psichoanalítico **le** devolvió [a María]$_{DP}$ [a la
the therapy psychoanalytic CL.DAT gave-back to Mary.DO to the
estima de sí-misma]$_{XP}$.
esteem of herself.IO
'The psychoanalytic therapy helped Mary to be herself again.'

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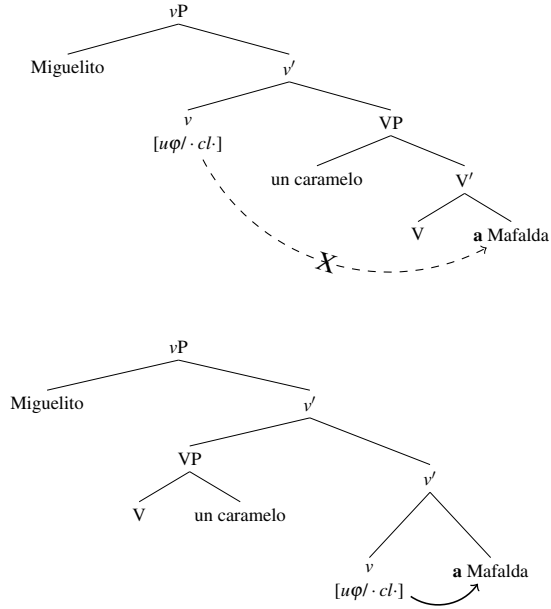
d. El tratamiento psichoanalítico **le** devolvió [a la estima de
the therapy psychoanalytic CL.DAT gave-back to the esteem of
sí-misma]$_{DP}$ [a María]$_{XP}$.
herself.DO to Mary.IO
'The psychoanalytic therapy helped Mary to be herself again.'

Presumably, the position of the indirect object affects clitic doubling because of Relativized Minimality. When the indirect object merges with V, the direct object c-commands it, and thus blocks the relevant probe from clitic doubling the indirect object. When the indirect object merges with *v*, however, neither argument c-commands the other. Moreover, if the clitic doubling probe is on *v* (as suggested by Longenbaugh [2019], e.g.), the only argument in its c-command domain is the indirect object, making minimality irrelevant to clitic doubling.

(156) Spanish XPs don't change form—IO bears an overt P-like head, clitic doubling tracks position



In sum, we have seen binding evidence from several languages whose ditransitive clauses all have different surface properties, which motivate two different ditransitive structures. All of these languages exhibited a particular interaction between word order and structure: indirect objects that follow direct objects are structurally ambiguous, but indirect objects that precede direct objects are not.

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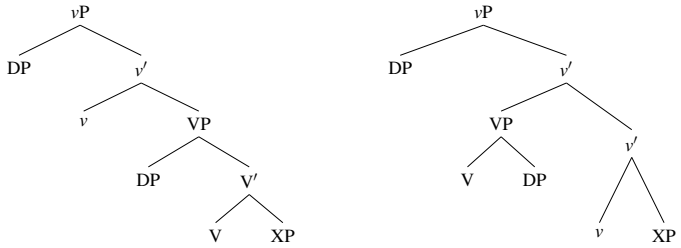
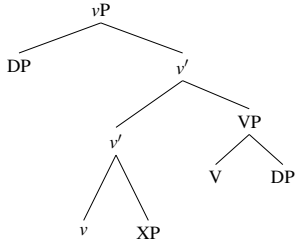
This pattern is expected on the present account but not on alternative approaches to the dative alternation.

On the present account, the word order DO-IO can be achieved through either structure in (157), where the indirect object is a complement of V in one case but a complement of *v* in the other. The word order corresponding to IO-DO word order, however, has only one structure corresponding to it, in which the indirect object is a complement of *v* (158).

(157) Two ditransitive structures corresponding to DO-IO word order



(158) VP-specifier-hood+VP-extraposition required for IO-DO word order



On other views of the dative alternation, the mapping between structure and pronunciation is typically one to one. The word order DO-IO is usually assigned a structure like (159a), called the prepositional dative construction, in which the direct object asymmetrically c-commands the indirect object. The word order IO-DO, is usually assigned a structure like (159b), called the double object construction, in which the indirect object c-commands the direct object. Theories differ regarding whether one of these structures is derived from the other (e.g., *Dative shift*, as in R. Larson [1988] and M. C. Baker [1997, 91]), or whether they are just independently generated options (as in Harley [2002], Harley and Jung [2015], and Harley and Miyagawa [2017]).

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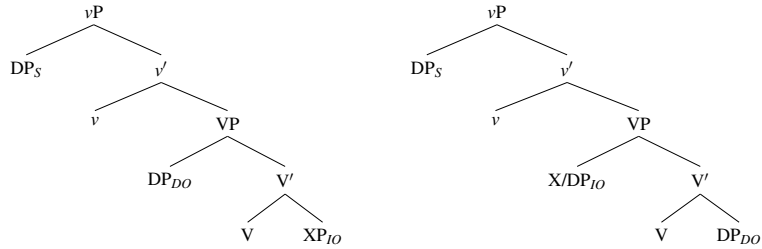
(159) Classical prepositional dative vs. double object construction (putting aside labels of functional heads)



Empirically, however, we find that sentences described with the tree on the left co-occur with optional backward binding, while sentences described with the tree on the right do not. In the context of backward binding data, the transformational theory is attractive for languages like Japanese, which independently has scrambling. Supposing that Japanese had just one ditransitive structure, with word order IO-DO, if the direct object scrambles above the indirect object to yield DO-IO order, we would expect the profile of binding that we find. DO-IO word order has two binding possibilities (surface vs. reconstructed), while IO-DO should reflect the base generated structure, where IO asymmetrically c-commands DO.

The problem is that not every language that shows this pattern has scrambling. Moreover, Miyagawa and Tsujioka (2004) argue that Japanese actually has two ditransitive structures instead of just one, so the asymmetric word order/binding interaction is still surprising. The puzzle is therefore why so many languages, irrespective of whether they have object movement, have the identical word order/binding interaction that we find (see Ray Jackendoff [1990] for additional arguments against dative shift).

On the present approach, languages are proposed to have the dative alternation because UG makes two structures available for ditransitive clauses, where one of these structures is compatible with two different word orders, predicting backward binding. We can therefore understand word order and binding interactions in ditransitive clauses without positing language-specific transformational strategies.

4.3.1 A Binding Theory

So far, we have seen that the logic of feature-driven Merge, combined with the proposed features [·*D*·], [·*V*·], and [·*X*·], jointly predict two available positions for non-DP arguments of the verb: Comp V and Comp *v*. I proposed that we

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could diagnose these two positions with binding and word order on the following assumption: the complement of *v* can bind into the contents of VP but not vice versa.

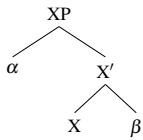
However, given that the complement of *v* does not c-command the domain of VP when VP is a specifier, I require a slightly modified binding theory that makes use of *m-command* in order to explain these facts. The modified binding theory is in (160).

(160) Binding theory:
  a. α binds β iff α and β are coindexed, and (i) and (ii):
    i. α m-commands β
    ii. β doesn't c-command α

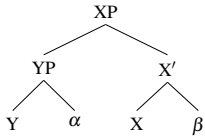
(161) M-command: α m-commands β iff every *maximal projection* that dominates α dominates β

(162) C-command: α c-commands β iff every *node* that dominates α dominates β

(163) a. If α and β m-command each other, but α asymmetrically c-commands β, α binds β and not vice versa



  b. If β asymmetrically m-commands α, β binds α and not vice versa



Treating β as an indirect object explains the binding patterns observed in section 4.3.[5] When the indirect object is an argument of V, it is c-commanded by the direct object and cannot bind it, and the only possible word order is DO-IO. When the indirect object is an argument of *v*, it asymmetrically m-commands the direct object and can bind it, and there are two available word

5. I assume throughout this investigation that a DP inside a prepositional phrase can bind another DP if the *entire prepositional phrase* m-commands the other DP. The intuitive description of the phenomenon is that arguments of a verb, regardless of category, can bear indices and engage in binding relations. However, a technical explanation for this property of XP arguments in a Minimalist framework is elusive (see for example Pollard and Sag [1994] for discussion and a solution from HPSG).

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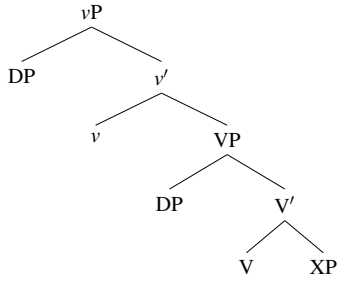
orders: DO-IO or IO-DO, depending on how VP is linearized. As a result, DO-IO word order can result in both forward and backward binding, but IO-DO order is only compatible with forward binding.[6]

4.3.2 Where Is the Verb?

I have motivated a view of the dative alternation in which ditransitive clauses have two kinds of ambiguity: structural and linear. The XP argument in a ditransitive may be either the complement of V or the complement of *v* (structural ambiguity), and in the latter case, VP may be linearized to the right or to the left of *v*′ (word order flexibility). What is unsurprising about the dative alternation, on this view, is that the relative order of direct and indirect objects is variable within many languages' ditransitives (i.e., they exhibit an alternation).

(164) Two ditransitive structures

a. XP is low: DP must linearly precede XP



6. This approach to binding theory takes some inspiration from Bruening (2014), who proposes that we abandon c-command and m-command altogether and take up a different notion, namely phase-command. In his proposal, DPs inside PPs can bind elements that they neither c-command nor m-command so long as they phase-command them, on the assumption that P is not a phase head.

(i) Phase-command: α phase-commands β iff every *phase* that dominates α dominates β

His approach, however, is not restrictive enough to account for the profile of anaphor binding, which leads him to propose additional processing conditions on anaphors that undergenerate in cases of backward binding. The present approach with m-command doesn't require additional principles and straightforwardly captures backward binding.

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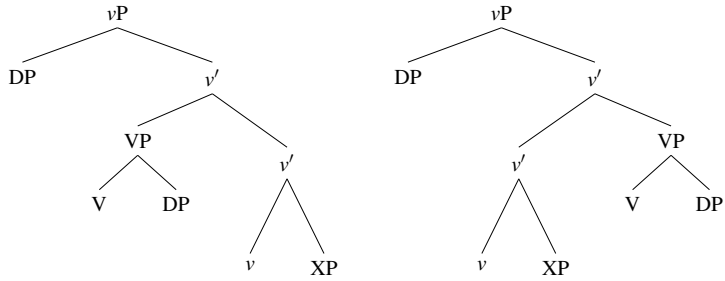
b. XP is high: DP-XP order depends on position of VP



While the position of arguments relative to each other may be flexible in many languages' ditransitives, the position of the *verb* relative to both arguments is usually fixed. In English, for example, the verb always precedes both arguments, regardless of their relative word order. In Japanese, a head final language, the verb always *follows* both arguments, regardless of their relative word order. Thus, while the relative order of arguments is determined transparently by structure, the position of the verb apparently is not. The verb would have to be pronounced in V in (165)/(166a) but in *v* in (165)/(166b) in order for the linear position of the verb to be read off of the structures in (167) and (168).

(165) *English*

a. Elmer **gave** [a fake present] [to Bugs].

b. Elmer **gave** [∅ Bugs] [a fake present].

(166) *Japanese* (Miyagawa and Tsujioka 2004, ex. 10, p. 5)

a. Taroo-ga [Hanako-ni] [nimotu-o] **okutta**.
Taro.NOM Hanako.DAT package.ACC sent
'Taro sent Hanako a package.'

b. Taroo-ga [nimotu-o] [Hanako-ni] **okutta**.
Taro.NOM package.ACC Hanako.DAT sent
'Taro sent Hanako a package.'

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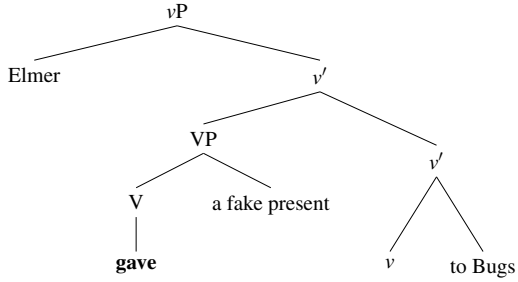
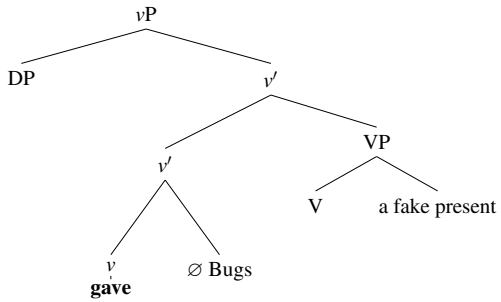
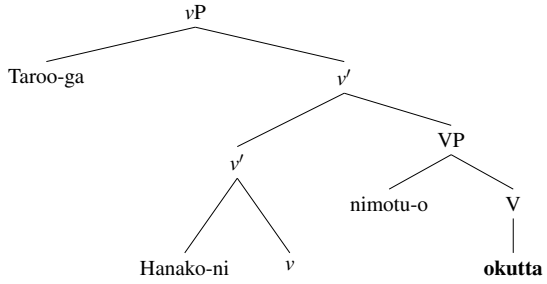
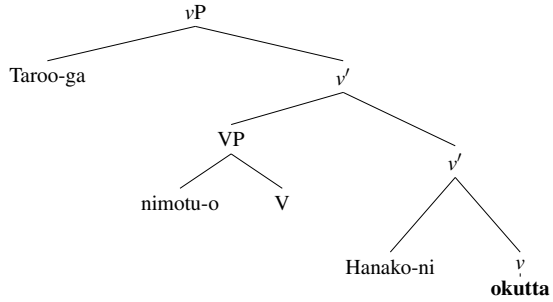
(167) English (head initial) high XP structures with variable word order





(168) Japanese (head final) high XP structures with variable word order





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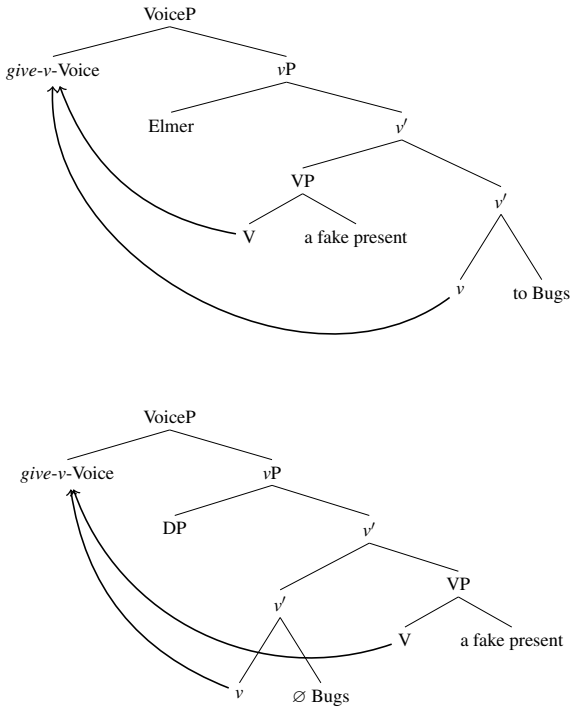
Unless the pronounced position of the verb is allowed to vary in the dative alternation (i.e., V in one variant but *v* in the other), in order for the verb to have a fixed position in the English and Japanese dative alternation, there needs to be some position above *v*P but below the derived subject position to which the verb moves. In chapter 3, I adopted the clause structure proposed by Collins (2005) and Merchant (2013), in which a Voice head controlling the active/passive distinction is projected above *v*P. This Voice head was proposed to be the locus of subject agreement in the Mayan languages. It may also be the position in which the verb is pronounced in English (and potentially Japanese) ditransitives. Hence, the position of the verb is fixed in both languages, while the relative positions of the internal arguments are not.

(169) English (head initial) high XP structures with head movement to Voice



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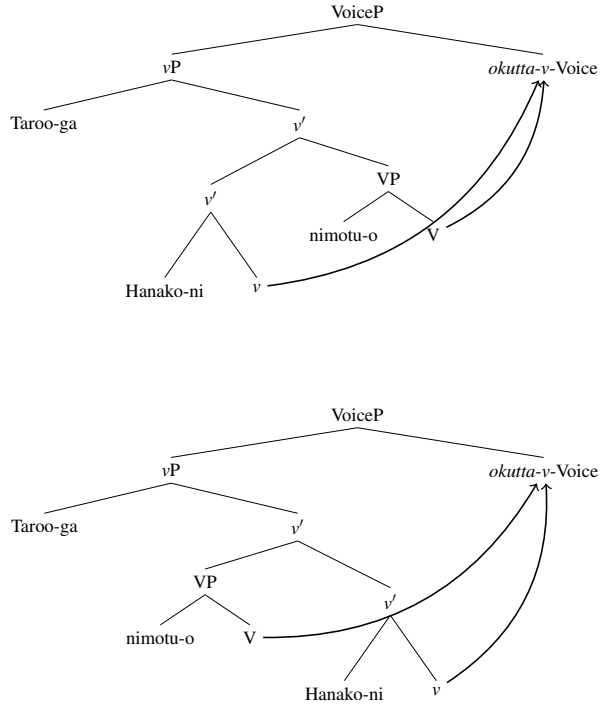
(170) Japanese (head final) high XP structures with head movement to Voice



Merchant argues in favor of (a) a dedicated Voice projection, and (b) its placement *above* the base position of the subject based on evidence from active-passive mismatches in VP ellipsis. He shows that the size of an elided constituent affects whether its value for Voice must match that of its antecedent. When the elided constituent is a VP (171), it is possible to find examples where the antecedent is active but the elided portion is passive and vice versa. When the elided constituent is a TP (172), however, no such mismatches are permitted.

(171) Voice-mismatches in VP-ellipsis

a. The janitor must remove the trash whenever it is apparent that it should be <removed>. (active antecedent, passive ellipsis)

b. The system can be used by anyone who wants to <use it>. (passive antecedent, active allipsis)

(172) No Voice-mismatches in sluicing

a. *Jo was murdered, but we don't know who. (passive antecedent, active ellipsis)

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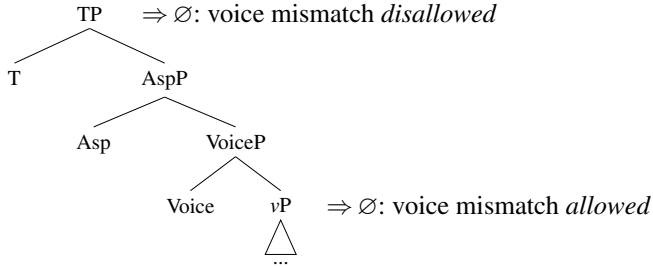
b. *Someone murdered Joe, but we don't know who by. (active antecedent, passive ellipsis)

Merchant argues that the facts in (171) and (172) motivate the clause structure from Collins (2005) in (173). He proposes that the active/passive distinction that is relevant to the identity condition on ellipsis is stored in a Voice projection above the *v*P. Elided material c-commanded by Voice therefore takes as an antecedent material that is also c-commanded by Voice, and does not include Voice itself. As a result, VP ellipsis (or more accurately *v*P ellipsis) is insensitive to the Voice of the clause containing the elided constituent, and that of the antecedent clause, because the elided portion has no Voice value. By contrast, sluicing (TP ellipsis) elides a constituent that contains the Voice head. If the elided constituent has a Voice head with a different value than that of its antecedent, the identity condition on ellipsis is not met, and the result is ungrammatical.

(173) Voice mismatches permitted if something smaller than VoiceP is elided, but not if something larger is elided.



Having motivated the existence of a Voice head above *v*P, is it reasonable to suppose that the verb is typically pronounced there? In general, it is *not* likely that the verb is pronounced in Voice (in English), or else the verb would not be elided with its *v*P in (171). I therefore conclude that in the kinds of monotransitive clauses we see in (171), in which VP is presumably the complement of *v*, the verb must be pronounced *v*P-internally.

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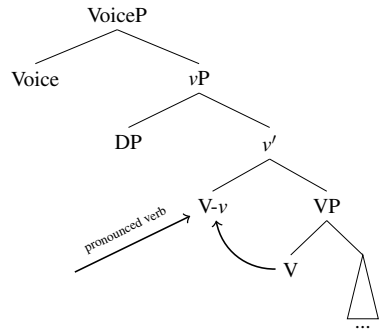
(174) VP is *v*'s complement: verb pronounced *v*P-internally, deleted in *v*P ellipsis



In ditransitive clauses where VP is *not* a complement of *v*, however, I have shown that the verb cannot have a consistent pronunciation location within *v*P, or else we would expect different word orders in ditransitives than we actually find. Moreover, following M. Baker (1988), VP specifier-hood should block V from head moving to *v*. Though English *v* has no overt pronunciation, there is no reason to believe that ditransitives crosslinguistically somehow fail to form the usual verbal complex of V-*v*, in which case they must adjoin to each other some other way.

I therefore propose that in this *specific* situation, V and *v* move to Voice to form a morphological complex. The proposal that verbs *must* move to Voice in clauses where VP is a specifier (but not otherwise) therefore makes the following prediction: any clause with a VP specifier (e.g., high XP ditransitives and 2XP clauses) in which some constituent containing the verb has been elided should not permit a Voice mismatch. If the verb is pronounced in Voice, an elided constituent containing the verb must also contain Voice. Hence, "*v*P"-ellipsis in double object constructions is predicted to pattern like sluicing rather than *v*P ellipsis in rejecting a Voice mismatch.

Looking closely at all of Merchant's examples of active/passive mismatches under ellipsis, there is a striking gap—none of his examples are of double object constructions. Attempting to formulate my own minimal pairs with (171) reveals that Voice mismatches in ellipsis with double object clauses are quite bad. This result is expected if the position of the pronounced verb is different in double object constructions compared to monotransitive clauses.

(175) Voice mismatches in double object constructions not permitted
  a. ??/*The janitor must give the animals food whenever it is apparent that they should be <given food>.

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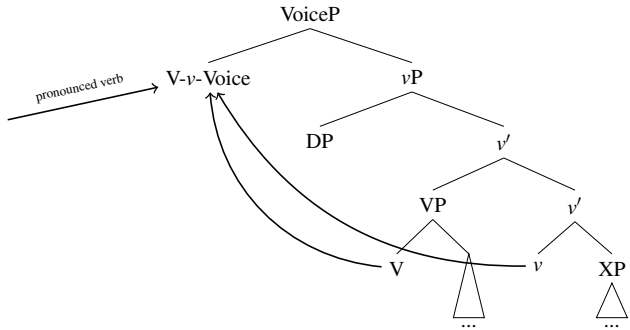
b. ??/*The system can be given your personal information by anyone who wants to <give it your personal information>.

(176) Voice mismatches in double XP clauses not permitted

a. ??/*The janitor should rely on the superintendent to call in a plumber whenever it is clear that his manager can't be <relied upon to call in a plumber>.

b. ??/*The system can be relied upon to store personal information by anyone who has to <rely on it to store personal information>.

(177) VP is *v*'s specifier: V and *v* each move separately to Voice; VoiceP ellipsis does not tolerate active-passive mismatches



In sum, it appears that formation of a V-*v* complex is a requirement for pronunciation of the verb. If VP is *v*'s complement, the verb can be pronounced in *v* after V head moves to *v*. If VP is *v*'s specifier, however, V cannot move to *v*. In order for them to form a morphological unit, V and *v* must each move separately to Voice.[7] If the verb is pronounced in Voice, eliding it entails eliding a VoiceP. Therefore, double object structures are correctly predicted not to tolerate Voice mismatches in ellipsis, because such structures contain a VP specifier of *v*, in which case the verb must be pronounced in Voice.

This approach requires head movement to be able to escape specifiers (so long as the landing site is a c-commanding head). Some might object to this view of head movement if we think that the VP specifier in ditransitives is subject to either freezing effects or the CED. Many have argued that restrictions on movement from specifiers can be obviated in certain contexts, however. Müller

7. It is not clear whether there are conditions on the internal structure of the V-*v*-Voice complex. For example, if *v* moves to Voice before V does, we might expect the internal structure of the complex head to be [V–[*v*-Voice]]. Whether anything enforces a particular order of head movement, or whether any of the possible complex head structures are ruled out by output constraints is a topic for future research.

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(2010), for example, suggests that movement is only restricted from the outermost specifier of a head, in which case the VPs in these structures are predicted to be transparent. As long as head movement in these cases are subject to the same constraints as phrasal movement (see Harizanov and Gribanova [2019] for discussion), we expect head movement to be able to escape VP in this case as well.

4.4 Conclusion

In this chapter, I explored the consequences of the Categorial Merge Hypothesis in the verbal domain, and motivated a set of features and categories responsible for the range of verbal contexts that we find. Assuming that every element of category V has the same Merge features as every other element of category V, I showed that the addition of an underspecified c-selectional feature [·*X*·] yielded a very restrictive theory of verb phrase syntax that was flexible enough to capture verb phrases with different numbers and categories of arguments.

I proposed that the co-occurrence of both specific and nonspecific features on a head constrained the positions of elements checking each kind of feature by imposing conditions on the order of operations. For example, I proposed that V bears both [·*D*·] and [·*X*·] features, which requires non-DPs to merge in VP before any DPs do.

This feature-checking logic was shown to interact with the functional hierarchy in a particular way; the same logic that forced DPs to be specifiers in the context of a non-DP argument also forced VP to become a specifier whenever *v* selected for a non-DP argument. This theory makes it possible for verb phrases to contain more than two arguments without a rich functional hierarchy, while still accommodating the space of derivational morphemes known to introduce arguments. For example, ApplP (in languages that have applicative morphology) doesn't need to be explicitly selected in a functional hierarchy, but rather may be merged with V or *v* in response to [·*X*·], which disrupts DP and VP-complementation.

We saw that the distribution of [·*X*·] had consequences for our view of the dative alternation and explained some puzzling facts about binding in ditransitives crosslinguistically. The two positions available to indirect objects, combined with the two ways of linearizing them, predicted a particular interaction between binding and word order that is otherwise unaccounted for on traditional views of the dative alternation.

In the next chapter, we investigate what these two ditransitive structures predict for A- and Ā-movement of direct and indirect objects in different languages. When the indirect object is merged as a complement of *v*, we expect

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either object of a double object construction to be able to raise to subject position without violating Relativized Minimality. However, we will see that the relative position of indirect vs. direct objects still introduces a derivational asymmetry between them, which makes the indirect object an earlier target for agreement and Ā-movement.

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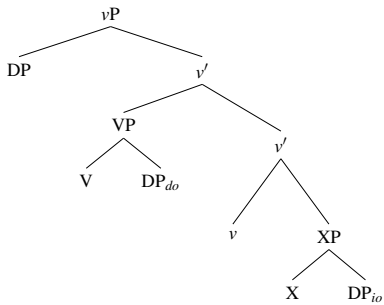
5 Passives and Wh-Movement

5.1 Weak Economy and Movement

In this chapter, we discuss both A- and Ā-movement within and out of *v*Ps, given the conditions on *v*P construction outlined in chapter 4. We will focus especially on ditransitive clauses, where we saw that the position of indirect objects had consequences for VP-complementation and c-command between internal arguments. An important result from chapter 4 was that the two internal arguments of certain ditransitive clauses do not c-command each other, as in (178).

(178) Ditransitives where XP is *v*'s complement



We will see that this proposed ditransitive structure has two consequences for views of locality in movement. The lack of c-command makes Relativized Minimality irrelevant to movement in these ditransitive clauses, which predicts either internal argument to be able to A-move across the other in a passive. However, the indirect object is accessible to operations at *v*P earlier than the direct object is. This is because the indirect object is accessible for movement as soon as *v* is merged into the structure. The direct object, by contrast, only becomes accessible to operations at *v*P once VP merges in Spec *v*P. I argue that this derivational asymmetry may make the indirect object move earlier than a

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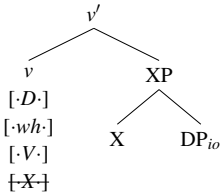
direct object depending on the features of the indirect object. If the indirect object has additional features besides [D], Weak Economy forces *v* to target it early for operations at its edge.

(14) Weak Economy
At every step in a derivation, if two operations A and B are possible, and A checks more features than B, the grammar prefers A, *unless* doing A bleeds B. In the latter case, the grammar optionally allows A or B.

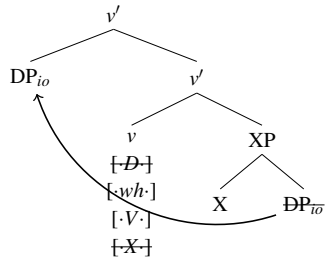
Illustrating the logic of Weak Economy at work, consider the point in the derivation at which *v* merges with an XP complement, shown in (179). The XP complement checks the [·*X*·] feature on *v*, leaving [·*D*·], [·*V*·], and [·*wh*·] for licensing additional specifiers of different kinds. The order of feature-checking determines the relative order of specifiers in *v*P.

(179) Step 1: Merge(*v*,XP)



Throughout this chapter, we will be focusing on passive clauses, which I propose are clauses where no external argument is merged in Spec *v*P. If no external argument is merged in Spec *v*P, the [·*D*·] feature on *v* can be checked by raising DP$_{io}$ to Spec *v*P. [·*D*·] is not the only feature on *v* that needs to be checked, however. A VP must also be merged in Spec *v*P at some point to check [·*V*·]. Since both operations (A-movement and VP-merge) check disjoint sets of features and neither one checks more features than the other, the derivation may choose either (180a,b) as a next step.

(180) Step 2: check either [·*D*·] or [·*V*·] first
a. check [·*D*·] first



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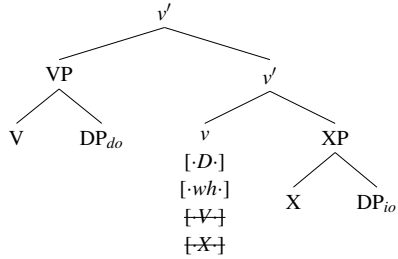
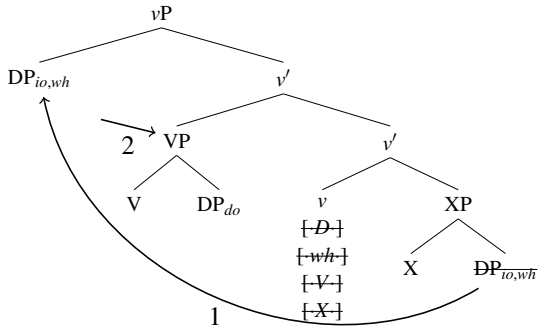
b. check [·*V*·] first



If, however, the indirect object were a wh-phrase, Weak Economy would enforce derivation (180a) over (180b). In that case, the indirect object would check two features on *v*, [·*D*·] and [·*wh*·], while merging VP would only check one, and neither operation bleeds the other, creating a context where Weak Economy can apply. Weak Economy therefore makes a general prediction about the order of operations in clauses like (178), whenever the indirect object can check two features—the indirect object should move to Spec *v*P before any other operation takes place. Due to Generalized Tucking in, early movement makes the indirect object the outermost specifier of *v*P, making it the highest accessible argument for agreement+A-movement to subject position.

(46) **Generalized tucking in** Paillé (2021), generalizing from Richards (1997):
Specifiers merge as close to the head licensing them as they can, so that each successive specifier tucks in under previously merged specifiers.

(181) Early IO raising makes it the outermost specifier of *v*P.



In situations where the indirect object checks only *one* feature, however, the fact that the derivation in (180a) is only optional predicts that indirect objects need not generally end up as the outer specifier of *v*P in passives. Derivation

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(180b) is also allowed, which makes the direct object available to check [·*D*·] on *v*P and beyond.[1] We therefore expect two kinds of movement patterns in passives of ditransitives: (1) the indirect object can check only one feature, so either internal argument may become the surface subject of a passive, or (2) the indirect object can check more than one feature, so it must move first and become the surface subject.

In this chapter, we discuss both kinds of contexts. In non-wh-questions, many languages permit either internal argument of a double object construction to raise to subject position. I propose that indirect objects in these languages/contexts can only check one feature on *v* (unless they are wh-phrases), which predicts optionality in when/whether they raise to Spec *v*P and beyond. In section 5.3, we will see evidence from Holmberg, Sheehan, and van der Wal (2019) showing that these same languages/contexts force the indirect object to become the passive subject whenever it is a wh-phrase, thus instantiating the second kind of movement pattern.

We will see that some languages appear to permit only one or the other argument to raise in a passive, even in a non-question. Languages such as Greek never allow their indirect objects to raise; languages like English often block the direct object from raising (with some dialectal and speaker variation). I argue that these languages do not represent counterexamples to the theory, however. Greek indirect objects have overt inherent case, which may make them inaccessible to a [·*D*·] feature or subject agreement. We will see binding evidence from English that the asymmetry in passives is only apparent—both arguments can raise in a passive, with different consequences for XP pronunciation.

5.2 Passives of Non-questions

In the passive, the external argument is represented as a PP (e.g., a *by*-phrase in English) instead of a DP. Since non-DPs have different structural requirements than DPs, the position of the PP external argument is expected to be different than that of its DP counterpart—it must be the complement of either V or *v*. Moreover, the [·*D*·] feature on *v* that would normally have licensed the external argument is now available for checking by movement (183).

(182) Transitives vs. passives
  a. Jo wrote a novel. (two DPs)
  b. A novel was written by Jo. (1DP, 1XP)

1. In principle, the indirect object is also still available to check [·*D*·] on *v* in derivation (180b). However, due to tucking in, moving the indirect object to an inner specifier of *v*P doesn't necessarily have the effect of promoting it over the object.

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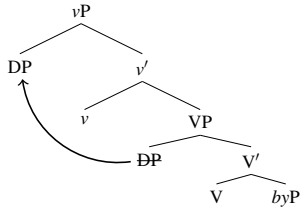
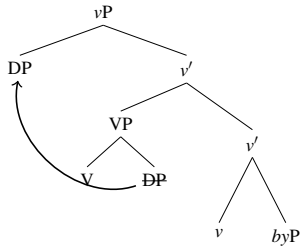
(183) Two ways to build a passive of a monotransitive

a. *by*-phrase is low

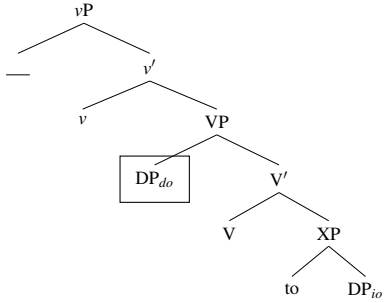


b. *by*-phrase is high



Assuming A-movement is constrained by Relativized Minimality (Rizzi 1990), if there is no transitive subject in Spec *v*P, the closest DP to it should raise and check that feature. What counts as the "closest" DP depends on the presence and position of any other XPs in the clause. Section 4.3 motivated two positions for XP arguments in a ditransitive: the complement of V (low) or the complement of *v* (high). Looking at each possibility separately, we see that clauses with a low XP argument unambiguously promote the DP argument of V in a passive, since the DP asymmetrically c-commands the XP. Clauses with high XP arguments, by contrast, should optionally promote either the complement of X or the DP argument of V, since neither c-commands the other.

(184) Passive with a low IO: Only the theme can raise due to locality.



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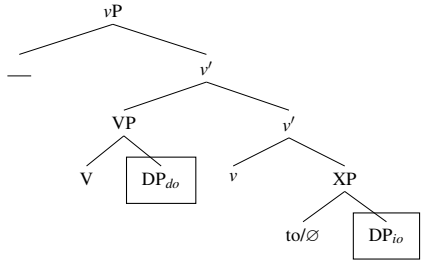
(185) Passive with a high IO: Either the theme or the recipient can raise.



We therefore expect direct object passives to be derivable from two different structures but indirect object passives to be derivable only from one: direct objects can raise to Spec *v*P in either (184) or (185), but indirect objects can only raise to Spec *v*P in (185). The predictions of this approach to the dative alternation are different than on standard approaches. Traditionally, ditransitive structures always establish a c-command relationship between the direct and indirect objects, so each structure should only promote one argument. On the present view, by contrast, one ditransitive structure asymmetrically promotes one but not the other argument, while the other structure promotes either one. In order to test the predictions of this theory compared to others, we crucially need to determine whether direct objects can raise from both (184) and (185). If so, such evidence would support the present theory and be unexpected on alternative views.

In a recent (non-comprehensive) survey, Holmberg, Sheehan, and van der Wal (2019) describe the following languages as having symmetric passives: Norwegian, North-West British English, Zulu, Lubukusu, Xhosa (Visser 1986), Swati (Woolford 1995), Haya (Duranti and Byarushengo 1977), Fuliiru (van Otterloo 2011), Sotho (Morolong and Hyman 1977), and Tswana (Creissels 2002). Taking Norwegian and Zulu as two examples from their list, we can see that both Norwegian and Zulu have a dative alternation. Moreover, the double object construction in both languages is compatible with either argument raising to subject position in a passive.[2]

2. Norwegian direct object passives can also be built from prepositional dative constructions, as we expect. Indirect object passives cannot, which we also expect if they are low XPs in this context. Engdahl and Laanemets (2015), however, note that Norwegian permits some indirect objects to raise in clauses like (i) if the direct object is part of an idiom.

(i) *Norwegian asymmetric passives of prepositional datives* (Johannes Norheim, p.c.)
a. En bok ble git _ til Marit.
a book was given to Marit
'A book was given to Marit.'

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(186) *Norwegian ditransitives* (Anderssen et al. 2012, ex. 2, p. 25)

a. Jon ga Marit en bok.
Jon gave Marit a book
'Jon gave Marit a book.' (double object construction)

b. Jon ga en bok til Marit.
Jon gave a book to Marit
'Jon gave a book to Marit.' (prepositional dative construction)

(187) *Norwegian symmetric passives of double object constructions* (Holmberg, Sheehan, and van der Wal 2019, ex. 1, p. 678)

a. Boka ble gitt Jon _.
the.book was given Jon
'The book was given to Jon.'

b. Jon ble gitt _ boka.
Jon was given the.book
'Jon was given the book.'

(188) *Zulu ditransitives*

a. uSipho u-phek-ela uMfundo iqanda.
AUG.1Sipho 1SG-cook-APPL AUG.1Mfundo AUG.5egg
'Sipho is cooking Mfundo an egg.' (Halpert 2012, ex. 186, p. 145) (double object construction)

b. u-Sipho u-zo-pheka ukudla **kwa**-zingane.
AUG-1Sipho 1SG-FUT-cook AUG.15food KWA-10child
'Sipho will cook food for the children.' (ex. 277, p. 212) (prepositional dative construction)

(189) *Zulu symmetrical passives of double object constructions* (Adams 2010, ex. 10, p. 11)

a. In-cwadi y-a-fund-el-w-a aba-ntwana.
9-book 9SM-REM.PST-read-APPL-PASS-FV 2-children
'The book was read to the children.'

b. Aba-ntwana b-a-fund-el-w-a in-cwadi.
2-children 2SM-REM.PST-read-APPL-PASS-FV 9-book
'The children were read a book.'

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b. *Marit ble gitt en bok til _.
Marit was given a book to
intended: 'Marit was given a book.'

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The availability of multiple kinds of passives from the same underlying structure is straightforwardly predicted by the present theory—neither internal argument c-commands the other in (185), so either one should be able to move to Spec *v*P and beyond without violating locality conditions on movement. Symmetric passives are thus the baseline pattern we expect for double object constructions crosslinguistically, as they require no language-specific mechanisms to derive them.

Not every language looks like Norwegian and Zulu, however. Most varieties of English prefer to use the prepositional form of the indirect object when the direct object raises (190a). On many other theories, the requirement for the preposition in (190a) is taken to indicate that direct object passives are only possible from a structure like (184). We saw in section 4.3, however, that morphology was not always a good indicator of structure in ditransitive clauses.

(190) a. A book was given %(to) Jo.
b. Jo was given a book.

In English, prepositional indirect objects could appear in either structure (184) or (185), which is why they participate in both forward and backward binding. Because the structure in (185) is compatible with either pronunciation of the indirect object, we need some other structural diagnostics to determine whether (190a) with the preposition can be derived from (185). If it can, the fact that many varieties of English require the preposition in (190a) would not be a strong indication of the *raising* possibilities of direct objects, but rather (185)'s possibilities for pronunciation. We will see in section 5.2.1 that there is evidence from binding for the structural ambiguity of the prepositional indirect object in (190a), thus showing that both raising possibilities predicted for (185) are found in English—either object can raise, but the indirect object takes its prepositional form when the direct object raises.

5.2.1 The Position of By-Phrases

As indicated in (183), there are in principle two XP positions in which to posit a *by*-phrase, which I propose are both utilized. The reason the *by*-phrase must be able to occupy either position is because it often co-occurs with other XPs, as in ditransitive clauses. The position of the *by*-phrase must therefore be able to shift according to the positional requirements of the other phrase—there are only so many [·*X*·] features to go around. If the lower one is checked by the indirect object, the higher one is available to the *by*-phrase, and vice versa.[3]

3. The fact that only two XPs are proposed to be licensed raises the immediate question of whether clauses with two non-DP arguments in the active can be passivized (and thus turned into clauses

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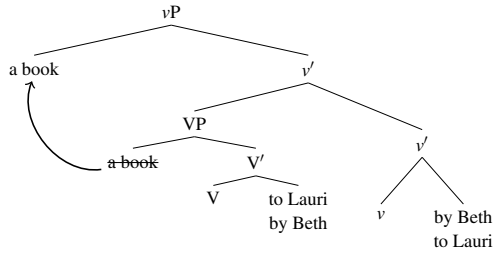
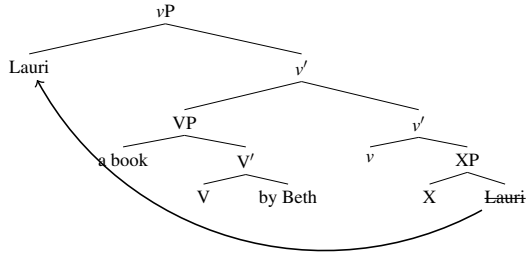
As we saw, the direct object can raise from either ditransitive structure in many languages, so the *by*-phrase is predicted to have an ambiguous position in direct object passives. By contrast, indirect objects can only raise if the indirect object is the complement of *v*, in which case the *by*-phrase must be the complement of V in indirect object passives.

(191) Theme-passive with a low IO/high *by*-phrase and vice versa.



(192) Recipient-passive requires a high IO, so the *by*-phrase must be low.



I propose (191) and (192) account for binding facts that have long eluded theories of the passive. In direct object passives of ditransitives, it is basically impossible to diagnose a c-command relationship between the *by*-phrase and the indirect object.[4]

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with three non-DPs). It appears that at least some such examples can be passivized, contrary to what we would expect if only two non-DPs were ever licensed in a clause.

(ii) John was bet [$_{XP}$ *t*] 4 dollars [$_{XP}$by Mary] [$_{XP}$that she could eat fifty eggs].

Taking inspiration from Collins (2005), however, it is possible that *by*-phrases are not typical prepositional phrases, but rather contain a Voice/*v* head themselves. If that is right, they may have an additional [·*X*·] feature, which would license the extra XP in (vii), though the status of examples with too many non-DPs will need to be more fully investigated in future research.

4. Collins (2005) and Bowers (2010) propose that the profile of NPI-licensing (among other similar tests) is an argument for an asymmetry between the *by*-phrase and *to*-phrase. They also use bound variable anaphora to motivate different conclusions about the position of the *by*-phrase: Collins (2005) argues that it is high, while Bowers (2010) argues that it is low. However, as discussed extensively in Barker (2012) and Barker and Shan (2014) (with predecessors including but not limited to Postal [1971], Wasow [1972], Jacobson [1972], Higginbotham [1980, 1983],

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(193) T-passives: Embedded anaphors can be bound in any XP by any XP in any word order.
  a. ?The books were given to Jo and Marmie$_i$ by each other$_i$'s parents.
  b. ?The books were given by each other$_i$'s parents to Jo and Marmie$_i$.
  c. The books were given by Jo and Marmie$_i$ to each other$_i$'s parents.
  d. ?The books were given to each other$_i$'s parents by Jo and Marmie$_i$.

The data in (193) pose a problem for any theory in which the *by*-phrase has a fixed position. If the *by*-phrase is high (as argued by Collins [2005]), we should not expect an indirect object to be able to bind into it as in (193a,b). If the *by*-phrase is low (as argued by Bowers [2010]), we should not expect it to bind an indirect object, as in (193c,d). The binding profile in (193) is also observed for principles B and C. In (194a), no matter where the two phrases are projected, there will either be a principle B or a principle C violation. Further embedding either the R-expression as in (194b) or the pronoun as in (193) will always remedy the situation, because there is always an available structure in which the relevant condition is obviated.

(194) Principles B and C
  a. *The money was sent to him$_1$ by John$_1$.
  b. ?The money was sent to him$_1$ by John$_1$'s mother.
  c. The money was sent to his$_1$ mother by John$_i$.

Gawron and Peters [1990], Bresnan [1994, 1998], Safir [2004], and others), NPI-licensing and bound variable anaphora pattern differently from binding more generally in a number of respects, which is why I have not made use of these tests extensively (though bound variable anaphora would actually support my conclusion that the *by*-phrase is flexible if it were sensitive to m-command). NPI-licensing has been shown to have a linear order requirement and bound variable anaphora is sometimes insensitive to c/m-command entirely.

(iii) NPI-licensing: sensitive to linear order
  a. The books were given to no professor by any student.
  b. *The books were given by any student to no professor.
  c. *The books were given to any student by no professor.
  d. The books were given by no professor to any student.

(iv) Bound variable anaphora: insensitive to c/m-command (Barker 2012)
  a. Everyone$_i$'s mother thinks he$_i$ is a genius.
  b. Each$_i$ student's advisor paid his$_i$ gambling debts for him$_i$.
  c. Everyone$_i$'s mother's lawyer's dog likes him$_i$.

(v) Bound variable anaphora in passives of ditransitives (Bowers 2010)
  a. Money was given to every student by his mother.
  b. Money was given to his mother by every student.

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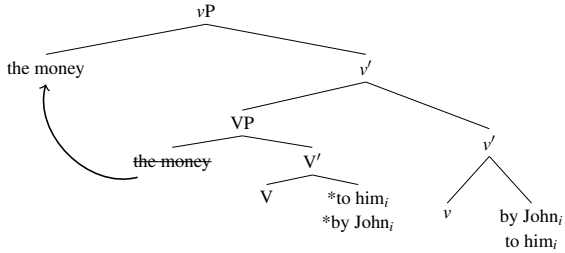
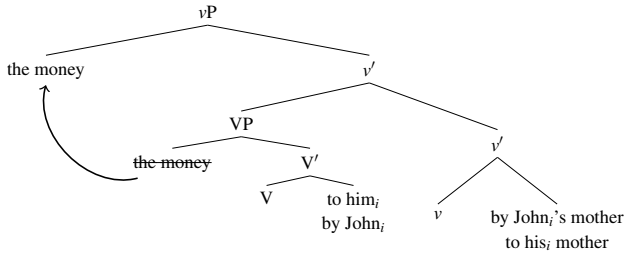
(195) Principles B/C rule out (194a)



(196) Rescue via embedding the R-expression in (194b) or the pronoun in (194c)



As expected, the same principle B/C behavior cannot be replicated when the *indirect* object raises. Indirect object passivization is only permitted for high XP indirect objects, so the *by*-phrase must be low. Principle C therefore blocks (197a,b), regardless of how much we embed the R-expression. Only embedding the pronoun in (197d) avoids a principle C violation.

(197) Replicating the principle B/C effect in indirect object passives
   a. *Lauri was shown them$_i$ by Jo and Marmie$_i$.
   b. *Lauri was shown them$_i$ by Jo and Marmie$_i$'s illustrations.
   c. Lauri was shown Jo and Marmie$_i$ by their$_i$ illustrations.
   d. Lauri was shown their$_i$ illustrations by Jo and Marmie$_i$ (themselves).

One might worry that if prepositional indirect objects are allowed to be complements of *v* in passives, and both direct and indirect objects are allowed to raise from this structure, that indirect object passives should optionally strand a preposition. These structures are compatible with either prepositional or non-prepositional indirect objects, so indirect object raising should be able to take place from either (198a) or (198b), contrary to fact.[5]

5. It is worth noting that Mills (2008) discusses some English varieties in which prepositional dative constructions appear to permit raising of the indirect object past the direct object, as in *%Mary was written a letter to* (Mills 2008, ex. 6, p. 14). Mills argues, based on semantic and

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(198) Indirect object raising doesn't strand prepositions.
a. Sue was given ___ a book.
b. *Sue was given a book to ___.

It is well known, however, that English pseudo-passives show special locality requirements between stranded prepositions and the verb (van Riemsdijk 1978; Chomsky 1981; Hornstein and Weinberg 1981; Baker, Johnson, and Roberts 1989; Baltin and Postal 1996; Bruening 2011; Drummond and Kush 2015, a.o.), which is sometimes taken to indicate that prepositions stranded under A-movement must incorporate onto the verb (199). The ungrammaticality of (198b) can thus be explained by the fact that the direct object can't linearly intervene between the verb and an incorporated preposition. The linear order that would support an incorporated preposition also permits the preposition to go unpronounced, leading to (198a).

(199) Adverbs can't intervene between V and stranded P in passives.
a. I (recently) talked (recently) to Gromit (recently).
b. Gromit was (recently) talked (*recently) to (recently).
c. Who did Gromit (recently) talk (recently) to (recently)?

In sum, though English is traditionally treated as a language with asymmetric passives, binding facts suggest otherwise. We have seen that direct object passives are structurally ambiguous in the sense that the indirect object can either bind or be bound by the *by*-phrase. As a result, we find that indirect objects never block a direct object from raising to subject position in English, just as we saw in the languages with symmetric passives. However, the passive apparently affects indirect object pronunciation in English (perhaps passive morphology disrupts adjacency between the indirect object and the verb), requiring in situ indirect objects to have their X head pronounced overtly. We will now see evidence discussed by Holmberg, Sheehan, and van der Wal (2019), showing that making the indirect object a wh-phrase in a passive may disrupt symmetry in A-movement, as predicted by Weak Economy.

5.3 Wh-Movement from Passives of Ditransitives

According to Holmberg, Sheehan, and van der Wal (2019), many (potentially all) languages with symmetric passives show a restriction whenever the indirect

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syntactic restrictions on the direct object in such cases, that the direct object is actually not a DP here, but rather has a reduced status that licenses pseudo-passivization across it.

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object is a wh-element in a double object passive. If the indirect object is a wh-phrase in this context, it must also be the passive subject, even though the direct object can typically be the passive subject in non-wh environments.

(200) **"Double object movement asymmetry"** (DOMA): The direct object cannot be the subject of a passive in which the indirect object has wh-moved (subjects in bold). (ex. 5, p. 680)

a. *Hvem ble **boka** gitt _ _?
who was the.book given
intended: 'To whom was the book given?' *DO=subject; IO=wh-phrase*

b. **Hvem** ble gitt _ boka?
who was given the.book
'Who was given the book?' *IO=subject; IO=wh-phrase*

The reverse pattern is not observed: when the *direct* object is a wh-phrase, no restrictions emerge regarding what element may be the surface subject (201)—direct object questions are compatible with either argument raising to subject position. The same restriction observed in Norwegian is observed in all of the other languages in their list, such as Zulu, as in the relative clauses in (202).

(201) ex. 5, p. 680

a. Hvilken bok ble **Jon** gitt _ _?
which book was Jon given
'Which book was John given?' *IO=subject; DO=wh-phrase*

b. **Hvilken bok** ble gitt Jon _?
which book was given Jon
'Which book was given to Jon?' *DO=subject; DO=wh-phrase*

(202) *Zulu*: Wh-movement from the passive. (ex. 14, p. 683, citing Jochen Zeller 2011)

a. I-nyama u-mama a-yi-phek-el-w-a-yo
9-meat 1AUG-mother REL.1SM-9OM-cook-APPL-PASS-FV-RS
i-mnandi.
9SM-tasty
'The meat that Mother is being cooked is tasty.'

b. *U-mama i-nyama e-m-phek-el-w-a-yo
1AUG-mother 9-meat REL.9SM-1OM-cook-APPL-PASS-FV-RS
u-kathele.
1SM-tired.
intended: 'Mother, for whom the meat is being cooked is tired.'

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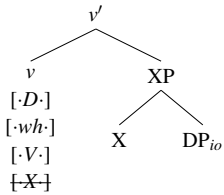
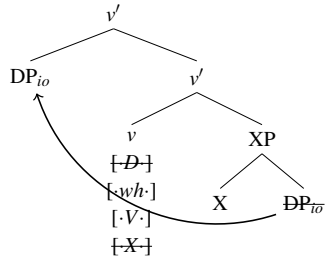
As discussed in section 5.1, this interaction between A- and Ā-movement is predicted by Weak Economy. When the indirect object can only check one feature on *v*, namely [·*D*·], the time at which it moves to check that feature is unspecified relative to other operations, such as merging VP. If the indirect object moves first, it becomes the outermost specifier of *v*P, making it the highest accessible argument for becoming the surface subject of the clause. If VP merges first, however, the direct object becomes a candidate for checking [·*D*·] as well, which would cause the indirect object to stay in situ. This optionality in the relative timing of DP- vs. VP-merge allowed for symmetric passivization in section 5.2. The trees in (179)–(181), repeated next, illustrate these different derivational choices.

(179) Step 1: Merge(*v*,XP).

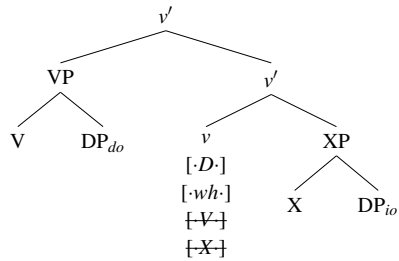


(180) Step 2: Check either [·*D*·] or [·*V*·] first.

a. check [·*D*·] first



b. check [·*V*·] first



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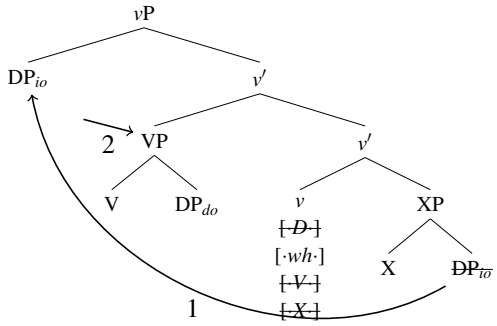
(181) Early IO raising makes it the outermost specifier of *v*P.



However, when the indirect object is a wh-phrase, it can check two features on *v*, [·*D*·] and [·*wh*·]. Weak Economy therefore prefers to move the indirect object first, before merging VP, which necessarily makes the indirect object the highest specifier of *v*P, that is, the surface subject.[6] Thus, in every language where the indirect object is allowed to move to subject position, we find that wh-moving it forces it to also become the passive subject, breaking the otherwise observed symmetry in passives.

Direct object questions do not disrupt symmetric passivization because they merge too late. The derivation must first merge VP before the features of the direct object can be considered for operations at *v*P. The indirect object therefore always has the option to move before VP is merged. Only after VP is merged can the wh-features on the direct object become visible.

At this point, one might wonder whether Weak Economy has consequences for the order of Merge in transitive subject questions as well. If a transitive subject is a wh-phrase, it could in principle check [·*D*·], [·*wh*·], and [·*X*·] on *v*, while VP can check only [·*V*·] and [·*X*·]. The transitive subject checks more features than VP, and does not bleed VP, which would seem to force it to merge as a *complement* of *v*, leaving VP to merge as a specifier.

This possibility points to a more general question: though this monograph has only considered VP-specifier-hood in contexts where *v* hosts a non-DP argument, in principle, VP-specifier-hood could generally arise in monotransitives as well. This is because nothing ever tells *v* to check [·*V*·] before [·*D*·], in which case both orders of feature-checking should be available. One

6. We only observe Weak Economy in passives for the following reason: if a transitive subject must be merged, it would check [·*D*·] on *v*, which prevents a wh-indirect object from checking more than one feature. The external argument is allowed to merge first because it checks a subset of the features checked by a wh-indirect object—Weak Economy therefore does not apply.

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order of feature-checking makes VP the complement of *v* (as is conventional), while the other would make the transitive subject the complement. Knowing how Weak Economy affects subject questions requires us to know whether this alternative derivation for mono-transitives ever arises, and if not, what pressures rule it out.

If we were to permit this derivation, it is worth noting that if the subject were the complement of *v*, it could get trapped there due to phase impenetrability (having already checked the [·*wh*·] feature which would have brought it to the edge of *v*P). Thus, even if the subject can in principle base merge as *v*'s complement, this choice might later lead to a crash if the subject has to wh-move. We therefore have a theory-internal reason to suppose that transitive subjects cannot be forced to merge as complements, or else they might never get to wh-move at all. The task then is to identify what pressures prevent such a derivation from occurring (or at least not enforce it), which I can only speculate about at this point.

It seems relevant that in a monotransitive context, with no XP argument to consider, DP-merge and VP-merge check an overlapping feature, namely [·*X*·], which could trick the derivation into thinking that the two operations bleed each other. If that is the case, perhaps Weak Economy really does not apply in subject questions, allowing the convergent derivation in which the transitive wh-subject merges as a specifier. In what follows, we will look at several cases where there is no feature overlap, where Weak Economy makes the right predictions. These examples are not just about how wh-movement affects Voice, but about how agreement, clitic doubling, and passives interact more generally.

5.3.1 Object Agreement and A-Movement

Some of the symmetric passive languages discussed by Holmberg, Sheehan, and van der Wal (2019) also have another situation in which operations involving the indirect object may influence A-movement possibilities. When the indirect object controls object marking on the verb, the direct object cannot be the passive subject, just as we saw for wh-moved indirect objects.

In the Zulu examples in (202), notice that there is a morpheme glossed OM on the verb, which is proposed to be a kind of agreement that may cross-reference non-oblique objects (but not oblique ones, see Halpert [2012, p. 223–224] for discussion). The status of this object marking is subject to some debate (see van der Wal [2015] for an overview). What is unique about it is that it never cross-references in situ or A-moved objects—passive subjects never control object agreement. Rather, the object agreement is partly discourse driven in that it tracks arguments that either Ā-move or right-dislocate from their in situ positions within *v*P to a *v*P-external position (or drop altogether). This is shown in

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(203), where we observe that the verb agrees with whichever object has right-dislocated (and may be dropped). If neither one moves or drops, there is no agreement. Following Iorio (2014) and van der Wal (2015), I will assume that there is a φ-probe controlling this agreement on v, but that it is more selective than many φ-probes—it only targets arguments with certain information structural properties.[7]

(203) *Zulu*: flexible object agreement (Holmberg, Sheehan, and van der Wal 2019, ex. 25, p. 688, citing Jochen Zeller 2011)

a. U-John u-nik-a aba-ntwana i-mali.
1AUG-John 1SM-give-FV 2-children 9-money
'John is giving the children money.'

b. U-John u-**ba**-nik-a i-mali (aba-ntwana).
1AUG-John 1SM-2OM-give-FV 9-money 2-children
'John is giving them money (the children).'

c. U-John u-**yi**-nik-a aba-ntwana (i-mali).
1AUG-John 1SM-9OM-give-FV 2-children 9-money
'John is giving it to the children (the money).'

If this analysis of object marking is correct, we would expect to see Weak Economy at work whenever the recipient controls object marking in general, not only if it is the target of wh-movement—the theory predicts that if the indirect object is available for any kind of additional feature-checking on v, not just wh-movement, it is predicted to move early and become the passive subject. This is indeed what we find in many of the Bantu languages in Holmberg, Sheehan, and van der Wal's (2019) sample, illustrated in (204)–(205) for Xhosa and Swati: recipient passives permit the direct object to control object agreement, but theme passives do not permit the recipient to control object agreement. That's because if the recipient controls object agreement, it blocks a theme passive by checking both the feature responsible for object marking as well as the $[\cdot D\cdot]$ feature on v which licenses A-movement.[8]

7. Scott (2021) discusses a typology of "composite" probing (van Urk 2015) that is well-suited to capture this kind of discourse sensitivity in φ-agreement. On a composite-probing approach, the φ-probe in Zulu has a component which targets information structural properties as well as φ-features, and does not interact with elements that bear one but not the other feature.

8. Incidentally, we never see recipient object marking in a recipient passive, though we would expect such a derivation to be possible. However, this may be due to Anti-redundancy—if the indirect object controls both subject and object agreement, perhaps the lower set of features has to be deleted.

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(204) *Xhosa* (Visser 1986, ex.16, p. 135)

a. Umfundi u-ya-yi-nik-w-a-incwadi.
student AGR-PRES-OM-give-PASS-PRES book
'The student was given a book.'

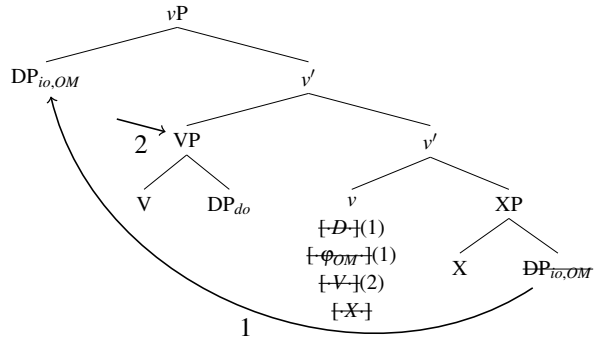
b. *Incwadi i-ya-m-nik-w-a umfundi.
book AGR-PRES-OM-give-PASS-PRES student
intended: 'A book was given to the student.'

(205) *SiSwati* (Woolford 1995, ex. 11, p. 202, citing De Guzman 1987)

a. Sínínì sí-wù-ník-w-è ngù Jóhn.
friend AGR-OM-give-PASS-PST by John
'The friend was given it by John.'

b. *Bànánà ú-sí-ník-w-è ngù Jóhn.
banana AGR-OM-give-PASS.PST by John
intended: 'The banana was given to him by John.'

(206) Weak Economy enforces early A-movement+object marking as well as A-movement+wh-movement.



We have therefore seen two situations in which an indirect object checks multiple features: (1) if it is a wh-phrase, and (2) if it controls object marking. In both cases, we saw that a direct object passive was blocked in that context. Weak Economy predicts this restriction by enforcing early A-movement whenever the indirect object checks another feature. As such, the indirect object must surface as the subject of the clause when it wh-moves or controls object marking in a passive, which blocks the direct object from raising.

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5.4 Languages with No Indirect Object Passives

We have discussed a number of languages with symmetric passives, which showed that certain ditransitive structures are capable of promoting either internal argument to subject position. We also saw that while English is typically argued not to be one of these languages, due to the morphological form of the indirect object in direct object passives, binding evidence suggested otherwise. This discussion has so far focused on whether the direct object was able to raise "past" an indirect object in a double object construction as a test for symmetry in passives, since traditional approaches to the double object construction consider such movement to violate Relativized Minimality.

However, there is another kind of asymmetry in passives that needs to be addressed, pertaining to the movement prospects of the *indirect* object. Some languages block the indirect object from being a passive subject (i.e., from being a nominative, agreement-controlling argument), no matter which ditransitive structure is used, despite the fact that it should be accessible to movement in at least one of them. Languages with this profile have a common property—their indirect objects are always marked with overt inherent case. The lack of indirect object passives is shown below for Greek, Tamil, German, Turkish, and Spanish double object constructions, a list that is not meant to be comprehensive.

(207) *Greek*

a. To vivlio tis charistike (tis Maria-**s**).
the book.NOM cl.GEN award.NACT.3SG the Maria-GEN
'The book was awarded to Mary.' (Anagnostopoulou 2003, ex. 33, p. 22)

b. *I Maria stalthike to grama.
the Maria.NOM sent.NACT.3SG the letter.ACC
intended: 'Mary was sent the letter.' (ex. 10a, p. 11)

(208) *Tamil*

a. Andæ pustagam Sai-kkŭ kuḍŭkka-paṭṭ-adŭ.
that book.NOM Sai-DAT give-PASS-3N.SG
'That book was given to Sai.' (Sundaresan 2020, ex. 1b, p. 15)

b. *Sai pustagatt-æ kuḍŭkka-paṭṭ-aan.
Sai book-ACC give-PASS-3M.SG
intended: 'Sai was given the book.' (Narayanan family, p.c.)

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(209) *German* (based on text in Sundaresan [2020, p. 16], and confirmed with native speakers)

a. Der Kuchen wurde ihm gegeben.
the.NOM cake was.PASS him.DAT give.PTCP
'The cake was given to him.'

b. *Er wurde das Buch geschenkt.
he.NOM was the.ACC book gifted
intended: 'He was given the book.'

(210) *Turkish* (Öztürk family, p.c.)

a. Ekmek Berk-e verildi.
bread.NOM Berk-DAT give.PASS.PST
'The bread was given to Berk.'

b. *Berk ekmeğ̆i verildi.
Berk.NOM bread.ACC give.PASS.PST
intended: 'Berk was given the bread.'

(211) *Spanish* (Montalbetti 1999, ex. 1, p. 133)

a. Una casa le fue vendida a María.
a house CL.DAT was sold to Maria
'A house was sold to Maria.'

b. *María fue vendida una casa.
Maria was sold a house
intended: 'Maria was sold a house.'

Unsurprisingly, these languages also don't show Weak Economy effects when the indirect object is a wh-phrase. When indirect objects in these languages wh-move, a direct object is still permitted to become the passive subject, presumably because the indirect object hasn't checked any of the features licensing A-movement, or if it has, it fails to control subject agreement (or otherwise act like a subject).[9]

9. Tamil indirect objects don't wh-move overtly. As Sundaresan (2020) argues, however, Tamil wh-phrases still move covertly, on account of the lack of an intervention effect from the focus particle in (i).

(iii) Raman pustagatt-æ **maṯṯum jaar-**ŭkkŭ kuḍŭ-tt-aan?
Raman.NOM book-ACC only.FOC who-DAT give-PST-3M.SG
'Whom did Raman give only the book?' (ex. 4, p. 16)

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(212) a. Tinos dhothike to vivlio?
who.GEN gave.NACT.3SG the book.NOM
'Who was the book given to?' (Anagnostopoulou 2003, ex. 308, p. 221) *Greek*

b. Andæ pustagam yaar-ŭkkŭ kuḍŭkka-paṭṭ-adŭ?
that book.NOM who-DAT give-PASS-3N.SG
'Who was that book given to?' (Sundaresan 2020, ex. 2b, p. 15) *Tamil*

c. Wem wurde der Kuchen gegeben?
who.DAT was.PASS the.NOM cake give.PTCP
'Who was the cake given to?' (ex. 7, p. 16) *German*

d. Kime ekmek verildi?
who.DAT bread.NOM give.PASS.PST
'Who was the bread given to?' (Öztürk family, p.c.) *Turkish*

e. A quién le fue vendida una casa?
to whom CL.DAT was sold a house
'To whom was a house sold?' (Johannes Norheim, p.c.) *Spanish*

The simplest explanation for the above facts is that indirect objects in these languages are not DPs. On this view, languages like English differ from languages like Greek due to an idiosyncratic property of the head that introduces indirect objects in each language. In English, the X head that hosts an indirect object selects for a DP complement (where X can be pronounced as an overt preposition or null according to English-specific pronunciation rules). In Greek, the X head that hosts an indirect object in a double object construction selects for a KP complement, which is therefore inaccessible to A-movement (213).[10] The presence or absence of K in an indirect object XP is transparently

10. The approach to treat the complement of X in Greek ditransitives as a KP raises the question of why the pronunciation of XP varies the way it does in the Greek dative alternation. When the indirect object is adjacent to the verb, the indirect object has to have the structure [X KP] because it is pronounced in its genitive form. When the indirect object is not adjacent to the verb, however, it needs to have the structure [X PP] or [X DP], because it is pronounced as a prepositional phrase.

(iv) O Gianis estile to grama **s-tin** Maria.
the Gianis.NOM sent.3SG the letter.ACC to-the Maria.ACC
'John sent the letter to Mary.' *prepositional indirect object*

We saw in chapter 4 that the choice between these two representations of the indirect object was largely conditioned by word order—both kinds of indirect objects could be "high" in the sense that they could both bind into the direct object. However, only the indirect objects that were adjacent to the verb could have their X head go unpronounced. It seems therefore that Greek also regulates the pronunciation of K in the context of different pronunciations of X: K is only pronounced if X is not.

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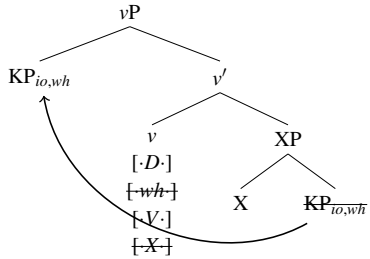
reflected in the morphology of a language's indirect objects. DP complements to X are pronounced as nominative or accusative DPs; KP complements to X are pronounced with overt inherent case.

(213) KPs can't check [·*D*·], only [·*wh*·]



In principle, since KPs presumably contain a DP, we might expect some languages to permit the DP inside an indirect object phrase to be able to strand K and X to check [·*D*·] on *v*. If that were possible, overt inherent case would not be a good predictor of passivization possibilities. The languages in this sample therefore require an additional stipulation in order to explain the lack of indirect object passives—K must not be strandable in these languages.

Even though the languages discussed in this section do not permit their indirect objects to raise to nominative, the indirect object is sometimes argued to still interfere with the direct object's ability to raise in a passive. Greek, for example, is known to have a *dative intervention effect*—even though the indirect object cannot A-move, it must be clitic doubled in order for the direct object to A-move. Section 5.4.1 discusses dative intervention effects in the context of the claim that indirect objects in Greek neither c-command the direct object nor are competitors for raising to subject position.

5.4.1 Recasting Dative Intervention as a Weak Economy Effect

Though Greek has direct object passives of double object constructions, Anagnostopoulou (2003) suggests that direct object A-movement is constrained by the restriction in (214). The direct object passive in (207a), repeated below, satisfies (214) because there is a genitive clitic before the verb corresponding to the indirect object. The presence of the clitic makes pronunciation of the full genitive phrase optional, as indicated by the parentheses around it. Importantly, the clitic is obligatory—removing it renders the example ungrammatical.

(214) A nominative DP may move across a dative DP only if the dative is realized as a clitic or is part of a clitic doubling chain.

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(207a) To vivlio *(**tis**) charistike (tis Maria-**s**).
the book.NOM CL.GEN award.NACT.3SG the Maria-GEN
'The book was awarded to Mary.' (ex. 33, p. 22) *Greek*

The requirement for a clitic in (207a) can be obviated if the indirect object wh-moves, however. In that sense, Greek exhibits a quasi wh-movement/Voice interaction. Restrictions on A-movement are affected by the distribution of wh-phrases.

(212a) Tinos dhothike to vivlio?
who.GEN gave.NACT.3SG the book.NOM
'Who was the book given to?' (ex. 308, p. 221) *Greek*

The distribution of clitic doubling in Greek passives is often argued to be evidence of an asymmetric c-command relationship between the indirect and direct objects in a double object construction. A-moving a direct object past an indirect object should violate Relativized Minimality on this view, so the indirect object has to first move out of the way (by wh-moving or becoming a clitic) before the direct object becomes accessible for A-movement. We have seen that many languages do not have this restriction, however, which I argued was evidence for a *lack* of c-command between the internal arguments. The profile of clitic doubling in Greek therefore demands a new explanation.

I propose that clitic doubling in Greek is explained by the present theory if we adopt the following assumptions about the features that produce clitics/clitic doubling chains. First, following the logic of Anagnostopoulou (2003), Béjar and Rezac (2003), and Preminger (2009, 2014), I assume that clitic doubling is mediated by Agree. I further propose that the φ-probe responsible for producing the clitic is on v in Greek. Second, following Longenbaugh (2019), who in turn borrows from Sportiche (1996) and Wurmbrand (2015), I assume that in order for the clitic produced by Agree to actually surface in a higher position, there must be a Merge feature licensing it, which I propose is also on v in conjunction with φ. I'm going to represent the feature that licenses movement of the clitic as a weak D feature, labeled $[\cdot D_{weak} \cdot]$ for reasons that will become clear later. Essentially $[\cdot D_{weak} \cdot]$ differs from $[\cdot D \cdot]$ in that $[\cdot D_{weak} \cdot]$ can be checked by any kind of D-bearing element while $[\cdot D \cdot]$ can only be checked by strong, full-fledged DPs.

With these two features on Greek v heads, the requirement for clitic doubling in a passive is simply another consequence of Weak Economy. If the indirect object is accessible for clitic doubling, it is accessible for two features on v: φ and $[\cdot D_{weak} \cdot]$. Merging VP, which would license direct object raising, can only

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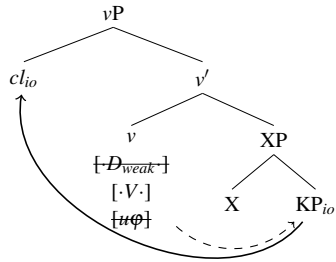
check one feature, so clitic doubling is required to take place before the direct object even becomes accessible to movement.

(215) Genitive IOs control clitic doubling early by checking [·D_{weak}·] and [$u\varphi$]



When the indirect object is a wh-phrase, however, clitic doubling becomes optional. We saw in example (212a) that the indirect object can wh-move in a direct object passive without clitic doubling. Clitic doubling is still available, however, as in (216).

(216) *Greek* wh-movement in direct object passives with genitive clitic doubling (Sabine Iatridou, p.c.)

a. Pianu **tu** estile i Maria to gramma.
Who.GEN.M CL.GEN sent the Maria.NOM the letter.ACC
'Who did Maria send the letter to?'

b. Pianu **tu** dhothike to vivlio?
who.GEN CL.GEN gave.NACT.3SG the book.NOM
'Who was the book given to?'

It's not immediately obvious why clitic doubling wouldn't be obligatory if the indirect object wh-moves in a passive. Making the KP a wh-phrase should simply allow the indirect object to check three features on *v* instead of two: [·D_{weak}·], [$u\varphi$], and [·*wh*·]. We might think that Feature Maximality should prevent the indirect object from checking some of those features without checking all of them, so clitic doubling and wh-movement should both happen at the same time. However, there is a subtlety here that introduces a complication in the application of Feature Maximality: when KP is a wh-phrase, the constituent that can check [·*wh*·] structurally contains the constituent that can check [·D_{weak}·] and [$u\varphi$]. Assuming that [$u\varphi$] probes for the φ-features on the DP *inside* the KP shell, the constituents involved in the checking of different features are different: the DP complement to K is relevant for [·D_{weak}·] and [$u\varphi$], while the whole wh-KP is relevant for [·*wh*·].

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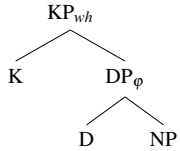
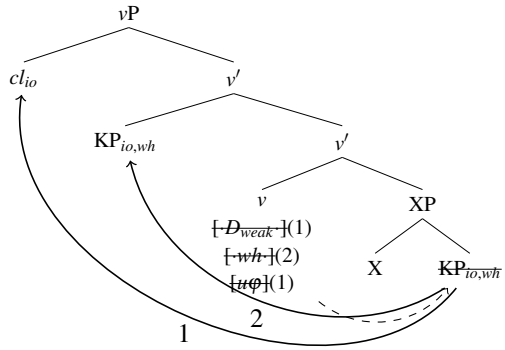
(217) The structure of a wh-KP



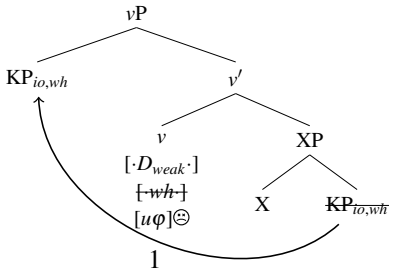
Choosing whether to wh-move KP first (and check [·*wh*·]) vs. clitic double the DP inside it first (and check [·D_{weak}·] and [$u\varphi$]) has consequences for which features can get checked. If KP wh-moves first, it removes the indirect object from the scope of *v*, thus rendering it inaccessible to clitic doubling. If clitic doubling happens first, wh-movement is still an option afterward, however. There is therefore a one-way bleeding relationship between these two possible orders of operations: wh-movement bleeds clitic doubling but not vice versa. Clitic doubling is therefore optional in these contexts, because one operation bleeds the other, in which case Weak Economy cannot apply.

(218) Checking [·D_{weak}·] and [$u\varphi$] vs. checking [·*wh*·] first

a. Clitic doubling first licenses later wh-movement.



b. Wh-movement first blocks clitic doubling.



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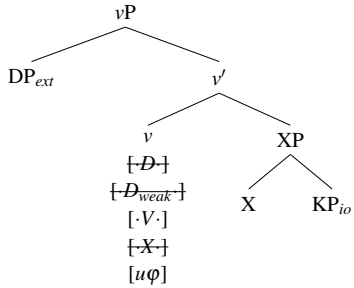
Finally, I have only discussed clitic doubling in passive clauses so far. We saw that in non-questions, Weak Economy enforced early clitic doubling with the indirect object before the direct object can A-move. However, clitic doubling is not obligatory in general. In an active, transitive clause, the indirect object is only optionally clitic doubled, as in (219).

(219) (Tu) edhosa tu Giani to vivlio.
CL.GEN gave.1SG the Gianis.GEN the book.ACC
'I gave John the book.' (Anagnostopoulou 2003, ex. 18, p. 15)

The treatment of clitics as weak D-bearing elements explains this optionality. In an active, transitive clause, the derivation has three operations available to it after the XP containing the indirect object is merged: (1) clitic double the indirect object, (2) merge VP, and (3) merge the transitive subject. Weak Economy prefers clitic doubling to VP-merge, but not to DP-merge. Merging the transitive subject checks both strong and weak D features on *v*, so it checks just as many features as clitic doubling would. If a transitive subject merges first, it checks the feature that would license clitic movement, thus bleeding it. If clitic doubling takes place first, a transitive subject may merge second. Weak Economy does not decide between these two options, allowing clitic doubling to be optional in active transitive clauses.

(220) Transitive subjects check [·D_{weak}·] and [·D·].



In sum, we have seen that clitic doubling in Greek need not be explained by positing a c-command relationship between the two internal arguments of a double object construction. Instead, we can explain the distribution of clitic doubling by exploring the allowed vs. enforced orders of operations in different contexts. We saw that clitic doubling is necessarily ordered before VP merge in certain contexts, which therefore requires clitic doubling to precede A-movement of a direct object, as in (214). However, clitic doubling was argued not to have to precede either wh-movement or Merge of an external argument, thus allowing it to be optional in other contexts. Importantly, the existence

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of a bleeding relationship between two available operations was argued to make both operations available—only when no bleeding is at stake does Weak Economy enforce a particular order of operations.[11]

5.5 Conclusion

This chapter combined the insights of chapters 2–4 by exploring how three different kinds of Merge interact in the course of a derivation: argument-Merge, A-movement, and Ā-movement. We saw that the timing of argument-Merge outlined in chapter 4 had consequences for locality in movement, by creating a ditransitive structure in which neither internal argument c-commands the other. This ditransitive structure straightforwardly predicts languages that show no Relativized Minimality effects in passives: either argument may raise to subject position in a passive because neither one c-commands the other.

We saw, however, that wh-movement interacts with the order of operations in a particular way whenever the indirect object is a wh-phrase. Because *v* also bears a [·*wh*·] feature, an indirect object wh-phrase might be accessible to *both* A- and Ā-movement to the edge of *v*P. Weak Economy prefers early wh-movement of an indirect object in this case whenever the only competing operation is to merge VP, promoting the indirect object to subject position in the process. As a result, we were able to explain the fact that indirect object questions built from double object passives in many languages ban the direct object from being the surface subject.

Wh-movement was argued not to be the only context in which we see Weak Economy at work. Object marking in many of the Bantu languages showed the same effect—when an indirect object can control object marking, we saw that a direct object was similarly banned from A-moving. This was argued to have the same explanation as the wh-movement facts—an indirect object that can control agreement as well as movement does both before the direct object becomes accessible to movement.

A similar logic was proposed to explain dative intervention effects in Greek. In Greek, clitic doubling was argued to precede direct object A-movement

11. One might worry that an economy condition that references bleeding necessarily faces a look-ahead problem. However, it is important to note that Weak Economy can only evaluate two competing operations at a time. If one of those operations directly blocks the other, the condition does not apply. To the extent that this choice contains a look-ahead problem, it is a very short-sighted one—the derivation only needs to know the immediate consequences of its choices. It cannot reference any later operations that are blocked or made available as a consequence of its choices. For example, it can't know, when deciding between A-moving an indirect object and merging VP, that raising the indirect object will bleed the possibility of raising an argument inside VP. It can only know whether raising the indirect object will block VP from merging.

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instead of blocking it, because clitic doubling checks multiple features on *v* without checking [·*D*·]. Weak Economy therefore requires clitic doubling to precede VP-Merge, but doing so does not prevent the direct object from later raising and becoming the subject of the clause. I additionally argued that Weak Economy really is about maximizing feature-checking without enforcing bleeding derivations. In order to explain cases of optional clitic doubling, bleeding configurations induced by structural relationships between the wh-element and the clitic doubled element needed to be taken into account in order to correctly predict the possible orders of operations.

In the next chapter, I discuss the present approach to clause structure in the context of the syntax-semantics interface.

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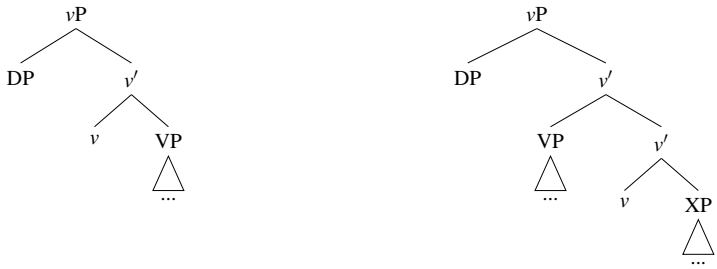
6 Interpreting Syntactic Structures

I have motivated a theory of structure-building and a set of features/functional projections in the verbal domain that, taken together, produce some familiar and some unfamiliar syntactic structures. The familiar structures all have one thing in common: VP is merged as *v*'s complement. By contrast, the unfamiliar structures make VP a specifier of *v*; if *v* introduces an XP (i.e., non-DP) argument, that XP must merge first as *v*'s complement before VP is merged.

(221) VP can be either a complement or a specifier of *v*



A second point of departure pertains to my treatment of the thematic hierarchy. While I assumed DPs to have relatively fixed positions in the verbal domain ("subject"-like theta roles are assigned to DP arguments of *v*, while "object"-like theta roles are assigned to DP arguments of V), I proposed that non-DPs in principle have a more flexible distribution. Arguments within a non-DP phrase were proposed to receive their thematic roles internally to that phrase (either because XP is a separate clause or a prepositional phrase). The position of a non-DP might therefore matter insofar as compositional rules are concerned (so not every non-DP in every kind of selectional relationship to the verb is flexible), but as far as thematic roles are concerned, the same non-DP argument could be generated "higher" or "lower" than the direct object with no consequences for its thematic interpretation.

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The flexibility of non-DPs was especially clear in my treatment of the dative alternation and the passive: the prepositional phrases in (222) and (223) were proposed to be structurally ambiguous, accounting for flexibility in binding. The complement of *to/by* presumably receives the same thematic role in both of the (a) and (b) examples, despite the fact that the PPs in the (a) vs. (b) examples correspond to two different structural positions. In (222a), for example, the theme of the ditransitive (i.e., direct object) is structurally higher (in the binding sense) than the recipient/goal (i.e., indirect object). In (222b), the reverse is true.

(222) PP indirect objects are structurally ambiguous.
   a. Jo showed Lauri and Amy$_i$ to each other's$_i$ parents in the mirror. (PP=V's complement)
   b. Jo showed pictures of each other$_i$ to Lauri and Amy$_i$. (PP=*v*'s complement)

(223) *By*-phrases are structurally ambiguous.
   a. ?The books were given to Jo and Marmie$_i$ by each others$_i$'s parents. (*by*-phrase=V's complement)
   b. ?The books were given to each other$_i$'s parents by Jo and Marmie$_i$. (*by*-phrase=*v*'s complement)

Thus, to the extent that my syntactic structures reflect a thematic hierarchy, it (a) is a very underspecified one, and (b) only applies to DP arguments of V and *v*. DPs that are selected by *v* are structurally higher than everything else. Whatever theta roles are associated with DP specifiers of *v* are therefore structurally more prominent than theta roles associated with arguments of V and X. Some aspect of the grammar presumably encodes this asymmetry between DP specifiers of *v* and everything else, and regularly assigns transitive subjects agent/causer roles. By contrast, DPs selected by V are potentially unordered relative to non-DP arguments, because non-DPs may be arguments of V or *v* with no consequences for their interpretation. Thus, the grammar presumably should not rank the theta roles of internal arguments relative to each other, but merely assigns transitive objects patients/theme roles. The description in (224) contains the kind of hierarchy we would need to describe the syntactic structures in chapter 4.

(224) A very underspecified thematic hierarchy (adapted from David Pesetsky's 24.902 class notes, 2013):
   a. An Agent or Causer of a predicate P is never a DP argument of V.
   b. A Patient or Theme of a predicate P is always a DP argument of V.

In sum, the present theory is incompatible with a universal thematic hierarchy that compares themes to recipients/goals, for example (or even agents

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to recipients/goals), because (222a,b)/(223a,b) express contradictory structural relationships between the two. This approach therefore invites a natural distinction between the introduction of "core" (DP) vs. "non-core" (non-DP) arguments. Both need to be *v*P-internal to be counted as participants in the same eventuality, but only DPs have a fixed distribution relative to V and *v* (i.e., only DPs are directly interpreted by V and *v*). Non-DPs introduce event participants that are interpreted conjunctively, as in a Neo-Davidsonian framework.

This chapter aims to address these controversial claims in the context of the syntax-semantics interface. I propose that the compositional system described by Kratzer (1996) naturally accounts for the flexible interpretation of non-DPs.

6.1 Linking Thematic Roles to Syntactic Structure

I assume that there is a module of the grammar, called the lexicon, which acts as a repository of all of the idiosyncratic aspects of language that need to be memorized (Chomsky 1965; Sciullo and Williams 1987). In the lexicon, we can find verbs and prepositions, for example, that may have a semantic requirement for an argument. In other words, we might find verbs such as *devour*, which s-selects for a *devouree*, and verbs like *rain*, which s-selects for nothing.

One of the major challenges for theories of argument structure predicated on this view of the lexicon is that the interpretation assigned to arguments is often predictable from their syntactic positions, despite the fact that they are interpreted as arguments of an idiosyncratic set of lexical items. Here, I will review some common approaches to the interpretation of arguments in the context of my claim that only *some* arguments have a predictable interpretation on account of their syntactic position.

Two common approaches to the interpretation of verbs and their arguments (that share this view of the lexicon) include alignment approaches (e.g., UTAH) vs. compositional approaches (or more accurately—decompositional approaches). On the former approach, a mapping algorithm/linking rule assigns thematic roles to arguments based on their relative position, which may be interpreted by the syntax-semantics interface. For example, the *v*P in (226) might be interpreted as in (227) because the algorithm assigns the DP complement of V *patient* and the DP specifier of *v agent*, based on their positions relative to each other and the verbal heads that selected them. The verb in (227) identifies the agent and patient as participants in a *hugging* event. For concreteness, I adopt a Neo-Davidsonian logical form throughout, following Castañeda (1967), Parsons (1990), Schein (1993), and Lohndal (2014a).

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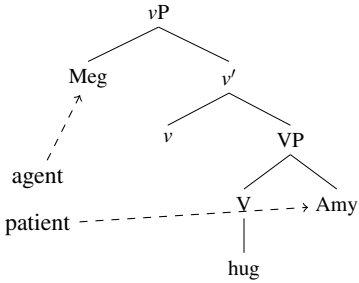
(225) UTAH (M. Baker 1988; M. C. Baker 1997): Identical thematic relationships between items are represented by identical structural relationships between those items at the level of D-structure.

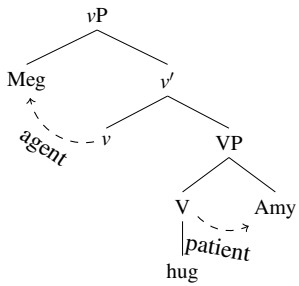
(226) Transitive clause: UTAH



(227) $[\![\text{hug}]\!](Amy)(Meg) \approx \exists e.\ \text{agent}(\text{Meg},e) \wedge \text{patient}(\text{Amy},e) \wedge \text{hug}(e)$

On the (de)compositional approach, the DP arguments in (228) are not assigned thematic roles by a mapping algorithm, but are rather interpreted as, for example, agents or patients depending on the meanings of the heads that selected them. On many versions of this approach, the aspects of a verb's meaning that are responsible for interpreting agents vs. patients are split across different morphemes: V does not s-select for an agent, but only selects for internal arguments, for example, patients or themes. Verbs come to have external arguments because they are selected by *v*, which assigns its specifier *agent*: the meaning of *v* is proposed to be something like $\lambda x_e.\lambda e.x \textit{ is the agent of } e$.

(228) Transitive clause: (de)compositional



(229) $[\![\text{hug}]\!](Amy) \approx \exists e.\ \text{patient}(\text{Amy},e) \wedge \text{hug}(e)$

(230) $[\![v]\!]([\![\text{hug}]\!](Amy))(Meg) \approx \exists e.\ \text{agent}(\text{Meg},e) \wedge \text{patient}(\text{Amy},e) \wedge \text{hug}(e)$

Both of these approaches have in common some notion of a theta hierarchy: theta roles associated with canonical subjects are mapped to positions that are structurally higher than theta roles associated with canonical objects. On an alignment approach, the regularity in structural difference between agents

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and patients is due to a principle of the grammar, which ranks agents as higher on a theta hierarchy than patients. The mapping rules must obey this hierarchy when assigning thematic roles to different arguments: structurally less prominent arguments get assigned theta roles that are lower on the hierarchy [see, e.g., (231)]. On the compositional approach, by contrast, the theta hierarchy is represented as a functional hierarchy: the agent-assigning head selects the non-agent-assigning head, which entails a structural difference between arguments of each head.

(231) Relativized UTAH (Belletti and Rizzi 1988): "... syntactic configurations projected from a given θ-grid should reflect the hierarchy, so that for every pair of θ-roles in the grid, the higher role in the hierarchy is projected to a higher structural position ..."

Considering only the interpretation of subjects and objects, the structures that I have proposed are compatible with either of these approaches. My picture of the verb phrase likewise needs to distinguish DP arguments of *v* as "external arguments" and DP arguments of V as "internal arguments," which need to be interpreted as (e.g.) agents vs. patients respectively. Whether this is achieved through a mapping algorithm or compositionally is besides the central goal of the present theory, which is to predict the distribution of arguments in different syntactic contexts.

However, my approach requires some elaboration to describe the interpretation of arguments that are *not* canonical subjects or objects. I proposed that non-DP arguments, such as the indirect object in (222) and (223) and the *by*-phrase in (223), may merge either as an argument of V or an argument of *v*, accounting for their flexible binding behavior. Nonetheless, the same thematic interpretation is assigned to the indirect objects in (222) and (223) and the *by*-phrases in (223).

(222) PP indirect objects are structurally ambiguous.
  a. Jo showed Lauri and Amy$_i$ to each other's$_i$ parents in the mirror. (PP=V's complement)
  b. Jo showed pictures of each other$_i$ to Lauri and Amy$_i$. (PP=*v*'s complement)

(223) *By*-phrases are structurally ambiguous.
  a. ?The books were given to Jo and Marmie$_i$ by each others$_i$'s parents. (*by*-phrase=V's complement)
  b. ?The books were given to each other$_i$'s parents by Jo and Marmie$_i$. (*by*-phrase=*v*'s complement)

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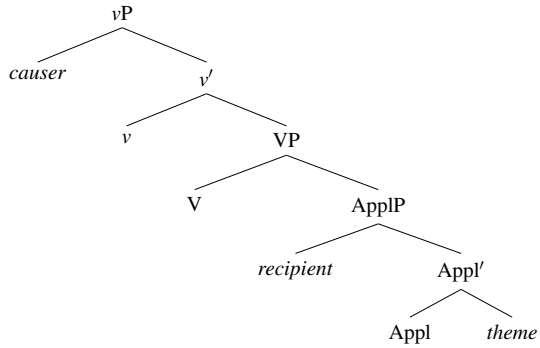
My treatment of binding in (222) and (223) as an effect of structural ambiguity is a departure from much of the literature, which assumes that the theta hierarchy is specified to rank each of the three arguments in (222) and (223) relative to each other. On an alignment approach, the more specified theta hierarchy is simply a more specified principle of the grammar, one that ranks agents, recipients, themes, goals, and others relative to each other. On the (de)compositional approach, the more detailed theta hierarchy is realized as a more detailed functional hierarchy: functional projections responsible for interpreting agents, recipients, themes, goals, and others are proposed to obey selectional requirements resulting in some configurations but not others, with the end result mirroring the theta hierarchy.

(232) More articulated UTAH (M. C. Baker 1997)
   a. An agent is the specifier of the higher VP of a Larsonian structure. (*v*P in my trees)
   b. A theme is the specifier of the lower VP.
   c. A goal, path or location is the complement of the lower VP.

(233) (De)compositional approach: Theta hierarchy = functional hierarchy.
   a. Pylkkänen (2008): *v*, ApplP, and VP are selected serially, entailing a relative ranking between them.



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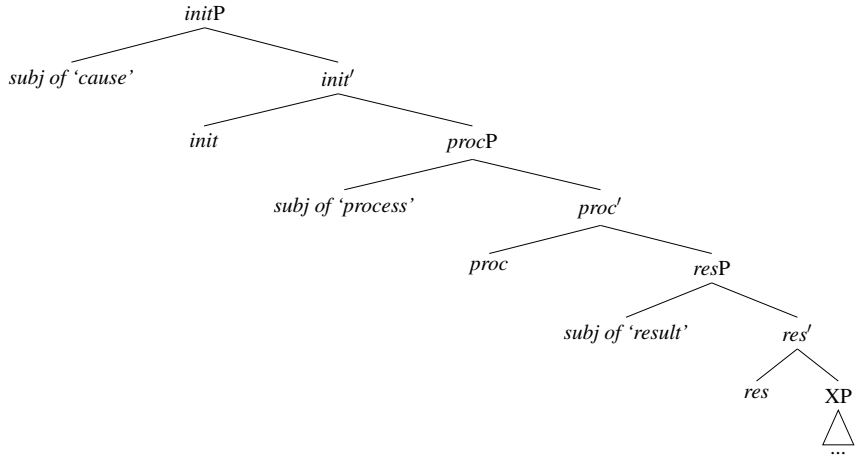
b. Ramchand (2008): different functional projections but similar idea



The binding facts in (222) and (223) present a straightforward counterexample to the claim that, for example, themes and recipients are ranked relative to each other, unless we adopt either of two proposals, both of which have been proposed in some form in the context of the dative alternation. On one approach, we might relate the two structural positions via movement (cf. R. Larson 1988; M. C. Baker 1997). On the other approach, we might assume that the theta hierarchy is more articulated than we thought (cf. Oehrle 1976; D. Pesetsky 1995).

Suppose that the grammar contained a universal ranking between recipients and themes [either as a separate principle or as a functional hierarchy as in (233)]: recipient > theme, where > means *structurally higher* in some relevant sense. The binding profile in, for example, (222b) would come for free on such a proposal, because the recipient binds the theme, indicating that it is structurally higher than the theme. The puzzle is thus how to account for, for instance, (222a), where the theme binds the recipient.

On the movement approach, we might assume that the theme raises above the recipient to derive the word order in (222a,b), creating a new antecedent for binding. Thus the underlying structural relationship between the theme and recipient obeys the thematic hierarchy, but movement derives a different surface structure. Whether the theme is interpreted in its derived vs. base-generated position determines its ability to bind the recipient and vice versa.

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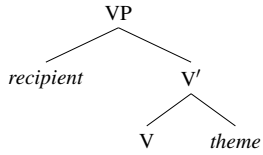
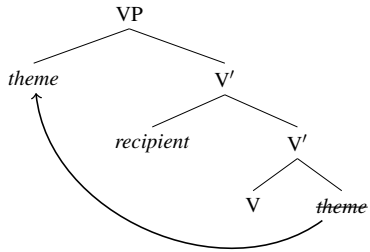
(234) "Base" structure: recipient > theme



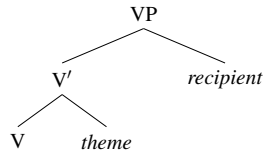
(235) "Derived" structure: theme > recipient



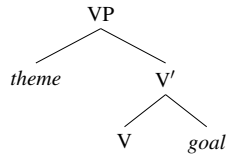
Alternatively, there could be no movement of the form in (235). Instead, we might propose that the PP in (222a) has a different thematic role than the PP in (222b), one that stands in a different relationship to themes according to the thematic hierarchy (despite the fact that we see the same preposition in both cases). We could label the PP in (222a) as "goal" and the PP in (222b) as "recipient" and update the thematic hierarchy to: recipient > theme > goal.

(236) Two "base" structures:

a. recipient > theme



b. theme > goal



The theory would be simpler if we could do without construction specific movement rules or more detailed stipulated hierarchies. The existence of facts like (222) and (223) therefore raises the question: Is the theta hierarchy really as fine-grained as (232) and (233) suggest? If not, the structural flexibility of non-DP arguments would simply be expected. Recipients could be generated above or below themes, with the observed consequences for binding. I propose that the two compositional rules described by Kratzer (1996) straightforwardly capture the rigid vs. flexible interpretation of different kinds of arguments. We therefore

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don't need transformational rules or a modified UTAH to explain (222) and (223).

6.2 Argument Introducers and Compositional Rules

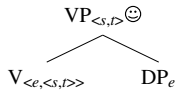
I take as a starting point the assumption that argument-introducing heads are of semantic type $<e,<s,t>>$. Following Kratzer's conventions, I use s as the type of events, e as the type of individuals, and t as the type of truth-values. I abstract away from intensionality throughout this discussion. In prose, argument introducers are functions that map individuals to events. I additionally assume that verb roots, derivational morphemes, and prepositions may all be argument introducers. An n-place predicate (where n=# of event participants) is thus built by successively conjoining n 2-place functions, where each argument introducer is a 2-place function (takes an individual and an event and returns a truth-value).

(237) $[\![\text{Argument introducer}]\!] = \lambda x_e \lambda e_s . x$ is an <*insert kind of participant here*> of e.

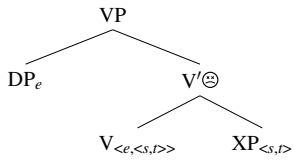
(238) V, v, and P/Appl/etc. can introduce arguments.

Due to their semantic type, argument introducers may compose with DPs via functional application, yielding a predicate of events. By contrast, argument introducers may not compose with predicates of events via functional application, because they require an individual first. Thus, if our only compositional tool is functional application, the VP in (239) should be interpretable but the VP in (240) should not be: V can only compose with DPs, which are individuals, not, for example, prepositional phrases, which are predicates of events.

(239) V can interpret a DP complement via functional application.



(240) V cannot interpret an XP complement via functional application.



As noted by Kratzer (1996), a similar problem arises for v. If v takes a VP complement, but is also responsible for introducing the external argument (and is therefore of type $<e,<s,t>>$), it cannot interpret its VP complement via

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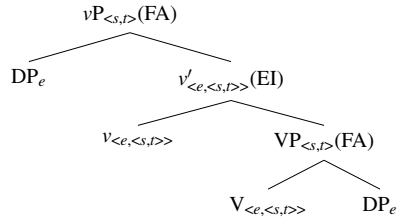
functional application. Kratzer therefore proposes a new compositional rule, called *Event Identification* (241), which enables heads like V and *v* to compose with XPs (and each other) before interpreting DP arguments.

(241) Event Identification (EI) (Kratzer 1996)

$$f_{<e,<s,t>>}EIg_{<s,t>} \rightarrow h_{<e,<s,t>>} = \lambda x_e \lambda e_s[f(x)(e) \wedge g(e)]$$

When an argument-introducing head encounters a predicate of events, event identification allows predicate modification to bypass the outer argument of the argument introducer, as if the argument introducer had first interpreted its type *e* argument before composing with the predicate of events. Essentially, event identification enables arguments of different heads to be interpreted as participants in the same event by treating each of them as a modifier of some event. As a result, the theme argument of V and the agentive argument of *v* are interpreted as participants in the same event in (242), despite being selected by different heads.

(242) Transitive clauses: V-DP interpreted by functional application, *v*-VP interpreted by event identification, DP-*v*′ interpreted by functional application.



The same logic enables V to compose with a non-DP before interpreting a DP specifier. A low XP ditransitive structure like (243) therefore involves two steps of event identification and two steps of functional application.

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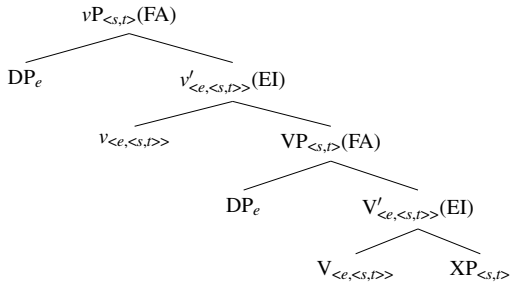
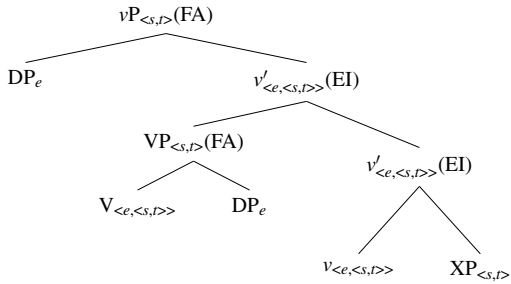
(243) Ditransitive clauses: V-XP interpreted by event identification, DP-V′ interpreted by functional application, *v*-VP interpreted by event identification, DP-*v*′ interpreted by functional application.



High XP ditransitives are likewise interpretable by these two compositional rules. In this case, *v* goes through two rounds of event identification before interpreting the external argument via functional application (244).

(244) High XP ditransitive clause: V-DP interpreted by functional application; *v*-XP interpreted by event identification; *v*′-VP interpreted by event identification; DP-*v*′ interpreted by functional application.



In sum, there are two compositional rules, which separately allow argument introducers to combine with arguments as well as projections of other argument introducers.

(245) Interpreting *v*Ps:
   a. Argument introducers compose with DPs via functional application.
   b. Argument introducers compose with projections of other argument introducers via event identification.

Merely splitting up argument-introducing responsibilities across different heads and offering a selectional relationship between them does not explain why certain thematic roles are associated with subjects while others are associated with objects. In other words, nothing about the system so far ensures that

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the subject of (246) will be interpreted as a *hugger*, with the object interpreted as a *huggee*.

(246) Meg hugged Amy.

We could imagine an argument introducer of category V that means $\lambda x_e.\lambda e.x$ *is an agent of* $e \wedge e$ *is a hugging event*. Such a V would interpret *Amy* as a *hugger*, despite the fact that *Amy* is syntactically an internal argument. Similarly, we could imagine an argument introducer of category *v* that means $\lambda x_e.\lambda e.x$ *is a patient of* e. Such a *v* would interpret *Meg* as a *huggee*, despite the fact that *Meg* is syntactically an external argument.

The theory must therefore appeal to some additional principle to ensure that arguments of V are necessarily interpreted as patients/themes while arguments of *v* are interpreted as agents/causer. There is a vast literature on the nature and assignment of thematic roles that debates whether this independent principle is encoded in the syntax, the lexicon, or in some other property of our cognition. I will not offer a concrete proposal that bears on this discussion. Instead I will simply adopt the convention of treating internal argument theta roles as properties of DP arguments of V and external argument theta roles as properties of DP arguments of *v*. A brute force way to include this convention in the theory is to stipulate that none of the verbal roots assign their arguments *agent*, and likewise that none of the argument introducers of category *v* assign their arguments *patient* (this is the bluntest way of interpreting Kratzer's (1996) move to relegate agent-assignment to *v*, as a matter of definition). A pared back mapping principle linking DP arguments of V to patients/themes and DP arguments of *v* to agents/patients would also have worked.

With this compositional setup as a backdrop, we are now in a position to posit meanings for some V, *v*, and X heads and see the results. The list in (247) is not meant to be comprehensive. In general, V is responsible for introducing patients/themes, *v* is responsible for introducing agents/causers, and prepositions (and other morphemes, e.g., *appl*, *dative*) can introduce any other kind of argument.

(247) Some argument introducers and their categories

a. $[\![\sqrt{hug}]\!] = \lambda x.\lambda e.\ \text{hug}(e) \wedge \textsc{patient}(x, e)$ V

b. $[\![\sqrt{give}]\!] = \lambda x.\lambda e.\ \text{give}(e) \wedge \textsc{theme}(x, e)$ V

c. $[\![v_{ag}]\!] = \lambda x.\lambda e.\ \textsc{agent/causer}(x, e)$ *v*

d. $[\![for]\!] = \lambda x.\lambda e.\ \textsc{beneficiary}(x, e)$ P

e. $[\![appl/\textsc{dat}]\!] = \lambda x.\lambda e.\ \textsc{beneficiary/recipient}(x, e)$ P/K

f. $[\![by]\!] = \lambda x.\lambda e.\ \textsc{agent/causer}(x, e)$ P

g. $[\![to]\!] = \lambda x.\lambda e.\ \textsc{recipient/goal}(x, e)$ P

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Note that there is some overlap among the argument introducers in (247): both *v* and *by* are proposed to introduce agents/causers, where *v* introduces the agent/causer in an active clause and *by* introduces it in a passive clause. In passive clauses, we might wonder whether we need a *v* projection at all, given that *by* introduces the agent instead.

We saw in chapter 5 that the *v* projection was crucial to forming passives of ditransitives. Since passives of ditransitives have two non-DP arguments, the *to*-phrase and the *by*-phrase, we needed two argument-introducing heads with [·*X*·] features to license them. I therefore follow Marantz (1997), Legate (2003), Sauerland (2003), and Deal (2009), among others, in assuming that there is always some *v* projection above VP, even in passives/unaccusatives, but that the *v* morpheme selected in these contexts does not have the same meaning as it does in active contexts. I'll call the *v* morpheme used in active contexts *agentive v*, or v_{ag}, and the one used in passive contexts *non-agentive v*, or $v_{\neg ag}$. Agentive *v* assigns an agentive theta role, while non-agentive *v* existentially closes over agents/causers, as in (248). Though I only discuss two possible denotations for *v* here, there are presumably other "flavors" of *v* as well that might be chosen for a variety of contexts (see e.g., Folli and Harley [2005]).

(248) $[\![v_{\neg ag}]\!] = \lambda e.\exists x.\ \textsc{agent/causer}(x, e)$. *v*

We are now in a position to compute the meanings of ditransitive clauses in both active and passive contexts, shown in (249) and (250). The only difference is that the agent in (249) is represented as a DP specifier of *v*P, while the agent in (250) is represented as a structurally ambiguous *by*-phrase. The *v* head must therefore represent a different lexical item in each case, one that introduces an agent in (249), and one that does not in (250). As a non-argument introducer in (250), *v* composes with XPs via predicate modification rather than event identification. We see that the structural ambiguity of *to* and *by*-phrases does not affect their interpretation.

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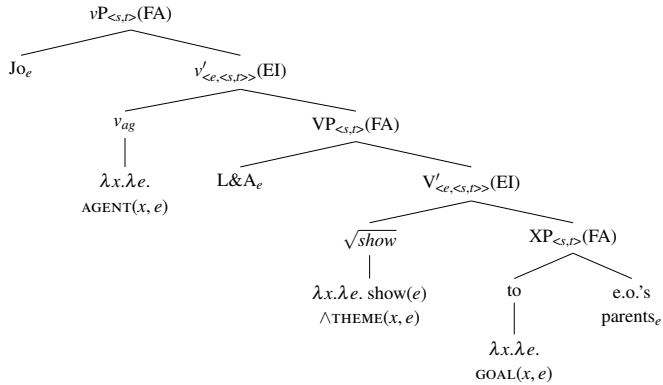
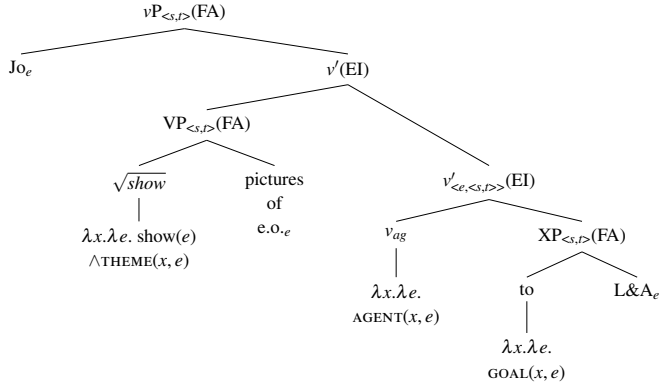
(249) PP indirect objects are structurally ambiguous.

a. Jo showed Lauri and Amy$_i$ to each other's$_i$ parents in the mirror. (PP=V's complement)

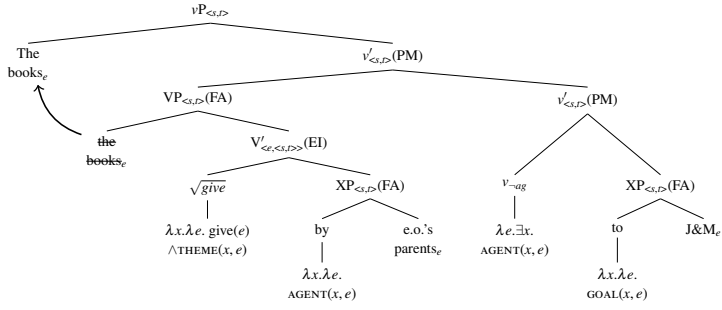


b. Jo showed pictures of each other$_i$ to Lauri and Amy$_i$. (PP=*v*'s complement)



(250) *By*-phrases are structurally ambiguous.

a. ?The books were given to Jo and Marmie$_i$ by each others$_i$'s parents. (*by*-phrase=V's complement)



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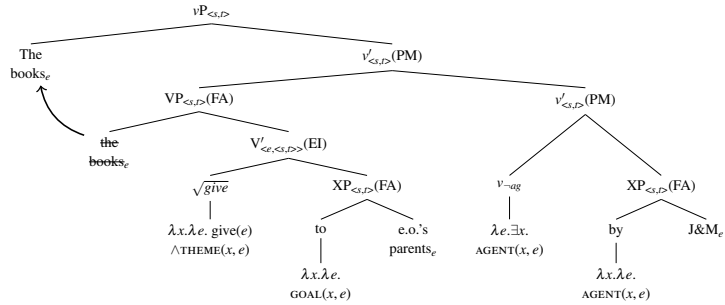
b. ?The books were given to each other$_i$'s parents by Jo and Marmie$_i$. (*by*-phrase=*v*'s complement)



There are some well-known puzzles related to this kind of approach to interpreting verbs and arguments. The first is that not all DP subjects are assigned *agent* (nor are complements of *by* always assigned *agent*) (251), (252). Subjects can have a variety of interpretations, making it difficult to pinpoint the exact lexical entries for, for example, v_{ag} and *by*. Even more mysteriously, the theta role assigned to the subject of an active clause seems to be identical to that of its corresponding *by*-phrase, despite the fact that they are apparently interpreted by distinct lexical items (Lasnik 1988).

(251) Different kinds of subjects:
  a. **Jo** ate a pie. (*Jo*=agent)
  b. **The sun** melted the ice. (*The sun*=causer)
  c. **Meg** received a card. (*Meg*=recipient)

(252) Different kinds of *by*-phrases:
  a. A pie was eaten **by Jo**. (*Jo*=agent)
  b. The ice was melted **by the sun**. (*The sun*=causer)
  c. A card was received **by Meg**. (*Meg*=recipient)

Similarly, the interpretation of applied/case marked arguments is also flexible and sometimes restricted in interesting ways. The same indirect object in (253a–c) can be alternately a recipient, benefactive, or ruled out depending on the verb.

(253) Covert XPs can have different interpretations.
  a. Sue gave me a book. (*me*=recipient)
  b. Sue built me a house. (*me*=benefactive)
  c. *Sue held me a bag. (*Me* can't be either recipient or benefactive.)

On account of (251), (252), and (253), many researchers suspect that thematic role assignment as fine-grained as in (247) is not fundamentally a part of

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the lexicon. In other words, it is unlikely that the actual lexical entries corresponding to *by* or v_{ag} contain reference to the specific notion *agent*. It is likewise unlikely that dative specifically references either *recipient* or *benefactive*. If they did, we would need three different subject-introducing *v* heads, one for each of (251a–c), three different versions of *by* corresponding to (252a–c), and at least two different versions of dative corresponding to (253a–b).

The problems in (251), (252), and (253) are thus threefold: (1) how does a single morpheme come to be associated with multiple meanings? (i.e., how does *by* license three different theta roles in (252a–c)?), (2) how do multiple morphemes come to have the same meaning? (i.e., why do v_{ag} and *by* assign the same theta roles in the same contexts?), and (3) how do verbs express the kind of pickiness in (253c) pertaining to what non-core arguments they may co-occur with?

To answer question (1), the meanings of *by* and v_{ag}, for example, must somehow be sensitive to what kinds of theta roles are possible for a given argument in the context of a given verb root, and adjust accordingly. More specifically, *by* has to know in (252c) that the only kind of external argument its complement can be is a *receiver*, and v_{ag} needs to have the same kind of knowledge.

Many researchers have discussed the need to distinguish the role of extralinguistic, real-world knowledge from the role of semantic composition that reads off structure in the inferences available to different utterances (see especially discussion from Ramchand [2008] on Pustejovsky [1991]). It is possible that this apparent sensitivity on the part of argument introducers, about what kinds of interpretations are available to their arguments given different verbal contexts, falls into the former class of interpretive effects. Following this thought, though some knowledge of which argument is the *verb-er* and which argument is the *verb-ee* is indicated by syntactic structure and the choice of morphology, the precise thematic role for external arguments of verbs in (251) and (252) might be a reflex of our extralinguistic knowledge of what *eating/melting/receiving* events may involve. The actual lexical entries for *by* and v_{ag} might therefore be quite coarse, as in (254) (cf. Dowty's [1990] *proto-agent/patient* roles).

(254) Coarse meanings for v_{ag}/*by*:

a. $[\![v_{ag}]\!] = \lambda x.\lambda e.$ -ER(x, e). *v*

b. $[\![by]\!] = \lambda x.\lambda e.$ -ER(x, e). P

Thus, the subjects of (251) and the *by*-phrases in (252) might be interpreted in a literal sense as *eater/melter/receiver*, with our extralinguistic knowledge providing the understanding that an animate eater is an agent, an inanimate melter is a causer, and an animate receiver is a recipient.

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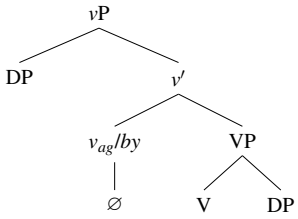
If this is right, we must now confront question (2): Why do we have two separate morphemes, v_{ag} and *by*, that have identical meanings? The only difference between them is syntactic: one is of category *v* and thus c-selects V as well as X, while the other appears to be of category P, which distributes as a non-DP. Moreover, these two morphemes are in complementary distribution—we never see clauses with two agents, each introduced by a different head.

(255) *Jo ate/was eaten the cake by Meg. (cf. *Jo and Meg ate the cake*.)

It is possible that v_{ag} and *by* simply *are* one and the same morpheme (and hence are both the same category), which may take different allomorphs in different contexts (inspired by Collins [2005], who argues that *by* is a kind of Voice head). On this view, v_{ag}/*by* would be a *v* head, which can introduce VPs/XPs/DPs and also be introduced by V/*v* as an XP. Whenever v_{ag}/*by* appears in an active clause (i.e., whenever it acts as a selector of a VP and takes a DP specifier), a contextual allomorphy rule chooses its null allomorph. Whenever v_{ag}/*by* takes a DP complement, and is itself selected by V/*v* (as in the passive), it takes its *by* allomorph. A constraint on redundant thematic role assignment should prevent two instances of v_{ag}/*by* from ever appearing in the same clause.[1] In sum, the fact that V and *v* each have an unspecified selectional feature [·*X*·] makes possible an inverse selectional relationship between a V and a *v*P so long as there aren't two agent-assigning heads in the same clause.

(256) v_{ag}/*by* can be a selector or a selectee of verb phrases.

a. Active clauses: v_{ag}/*by* selects for VP, pronounced as ∅.



1. Patrick Elliott, p.c., suggests that redundant thematic role assignment could be prevented by an even simpler amendment to the system, namely to adopt Parsons (1990), who treats theta roles as functions from events to their participants. In this view, the external argument of *eat* would not be interpreted as *an* eater, but *the* eater. Only one individual can be mapped to a single event participant—if v_{ag} and *by* were to co-occur and take distinct DP arguments, the result would be contradictory because *-er* maps each event to a unique individual.

(i) $[\![v_{ag}]\!] = \lambda x.\lambda e.\ \text{-ER}(e) = x$

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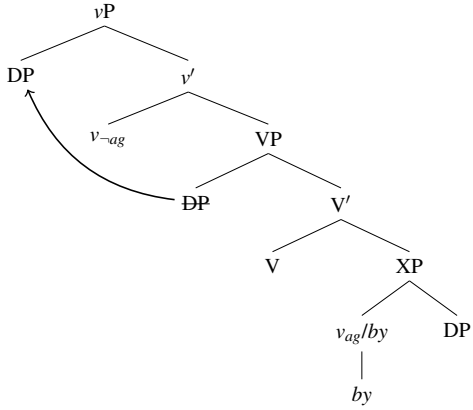
b. Passive clauses: v_{ag}/*by* licensed by [·*X*·] on V or *v*, pronounced as *by*.



In effect, this compositional system is beginning to look quite close to the one proposed by Wood and Marantz (2017). In their approach, the same small set of functional projections and features can combine in different ways according to conditions on syntax. Each structure may be interpreted and pronounced similarly or differently according to contextual allomorphy and allosemy rules. Thus, multiple syntactic structures may correspond to the same meaning (as in Bruening [2010]; Myler [2014]), just as the active and passive trees respectively in (256) interpret their arguments in the same way. My approach differs from theirs in the details of how feature-checking works and whether "argument introducer-hood" is a property of lexical items pre-derivation or is assigned in the course of the derivation. In spirit, however, this overall approach affords argument-introducing elements flexibility in their position, so long as they obey the conditions on Merge and result in an interpretable structure.

Lastly, there are many properties of verbal argument structure that I have not addressed. One of these properties relates to the pickiness of *hold* regarding the form of its non-core arguments. Recall that *hold* can take a benefactive argument, but not one that is realized in a covert dative shell. By contrast, other verbs like *build* can take a benefactive argument realized with a covert dative shell. Nothing that I have said so far indicates that a verb should be picky about what kinds of XP arguments it takes—XPs are always licensed syntactically and are interpreted separately.

(253c) *Sue held me a bag. (cf. *Sue held a bag for me*)

Pylkkänen (2008) shows that *hold* is not unique in its pickiness in (253c). All unergative and stative verbs in English pattern like *hold*. By contrast, many

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other languages' unergative and stative verbs can interpret benefactive arguments with dative or applicative morphology, and don't need to represent their benefactive arguments as PPs.

(257) Benefactive arguments with unergatives (pp. 20–21)

a. *English*
*I ran him.

b. *Japanese*
*Taroo-ga Hanako-ni hasit-ta.
Taro-NOM Hanako-DAT run-PST
'intended: Taro ran for Hanako.'

c. *Korean*
*Mary-ka John-hanthey talli-ess-ta.
Mary-NOM John-DAT run-PST-PLAIN
'intended: Mary ran to/from John.'

d. *Luganda*
Mukasa ya-tambu-le-dde Katonga.
Mukasa 3SG.PST-walk-APPL-PST Katonga
'Mukasa walked for Katonga.'

e. *Venda*
Ndi-do-shum-el-a musadzi.
1SG-FUT-work-APPL-FV lady
'I will work for the lady.'

f. *Albanian*
I vrapova.
him.DAT.CL ran.1SG.
'I ran for him.'

(258) Benefactive arguments with static verbs (pp. 20–21):

a. *English*
*I held him the bag.

b. *Japanese*
*Taroo-ga Hanako-ni kanojo-no kaban-o mot-ta.
Taro-NOM Hanako-DAT she-GEN bag-ACC hold-PST
'intended: Taro held Hanako her bag.'

c. *Korean*
*John-i Mary-hanthey kabang-ul cap-ass-ta.
John-NOM Mary-DAT bag-ACC hold-PST-PLAIN
'intended: John held Mary her bag.'

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d. *Luganda*
Katonga ya-kwaant-i-dde Mukasa ensawo.
Katonga 3SG.PST-hold-APPL-PST Mukasa bag
'Katonga held the bag for Mukasa.'

e. *Venda*
Nd-o-far-el-a Mukasa khali.
1SG-PST-hold-APPL-FV Mukasa pot
'I held the pot for Mukasa.'

f. *Albanian*
Agimi i mban Drites canten time.
Agim.NOM CL holds Drita.DAT bag.ACC my.
'Agim holds my bag for Drita.'

Pylkkänen (2008) argues that this difference between English/Japanese and Luganda/Albanian can be sourced to the meaning of dative/appl in each language. While English dative case has properties of so-called "low applicatives," which carry a *transfer of possession* interpretation, Luganda/Albanian dative/appl have properties of so-called "high applicatives," whose meaning is flexible enough to include instrumental, benefactive, and malefactive interpretations as well. Thus, English dative cannot mean what *for* can, but Albanian dative can. *Hold*, being a stative verb, is incompatible with an argument that can only participate in a transfer of possession, but is compatible with a genuine benefactive argument.

Integrating her findings into my approach has the following result: the positions of XPs are determined by their category, regardless of their meanings, so there is nothing structurally different about the dative arguments in English/Japanese compared to the dative/applicative arguments in Albanian/Luganda. Their ability to appear in the context of a certain verb phrase, however, is limited by their meanings as well as their syntax.

To summarize, I have argued that there are essentially two ways to be an argument of a verb. The first is to be a DP argument of a verbal head. Those arguments are canonical "core" arguments of the verbs, that is, subjects and objects. The second strategy is to be an argument of some non-DP phrase, which itself merges with a verbal head. These arguments may be either "core" or "non-core," depending on the meaning of X and the other argument-introducing heads. Because the XP category is nonspecific, XPs may be a variety of different kinds of constituents with different kinds of relationships to the main clause. Some may be clausal arguments, some may be indirect objects, some may be l-selected phrases such as the PP complement of *depend*, and so on. Unless an

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XP is s- or l-selected by a specific verbal head, it may be merged in either of two positions, and thus should be structurally ambiguous.

6.2.1 L-Selected XPs

I have argued that any XP that can compose with a verbal head via event identification has an in principle flexible distribution. Such an XP can be merged in either of two positions, and it can compose with the verb in either of those two positions. However, not every XP argument composes with verbs via event identification. Some arguments, for instance, DPs, compose with verbal heads via functional application, and some non-DP arguments presumably do as well. Some verbs might s-select for a propositional argument, for example, in which case an embedded clause would compose with the verb that selected it via functional application. Thus, not all non-DPs are predicted to have a flexible distribution; it depends on their semantic type and those of the present verbal heads.

Not every argument falls neatly into this picture, however. There are arguments that appear to get their thematic interpretation from the verb (and thus should have a fixed position) but are not obviously s-selected by the verb. We can describe such arguments as *l-selected* by verbs, as in (259). In (259a), for example, the complement of *on* does not receive a location interpretation but instead gets a theme-like interpretation, contrary to the meaning of *on*. Moreover, the verb *rely* does not s-select for a location argument, so there is no reason to suspect that an *onP* should be in the clause at all. Nonetheless, an *onP* is the only possible object of *rely*, and presumably gets its theme-like interpretation from the verb.

(259) L-selection for particular vocabulary items:
   a. Sue relies **on/*to/*of/*for** the bus.
   b. Sue bristled **at/*to/*of/*for** Sally's insult.

What makes verbs like *rely/appeal* special is that they appear to be interpreted with their prepositional complements noncompositionally—the meaning of *rely on the bus* cannot be gleaned from conjoining the interpretations of *rely* and *on the bus*. I therefore propose to treat cases of l-selection as we do expressions like *unruly* and *in cahoots*. On this view, it is the noncompositionality of (259) that gives l-selected arguments such a specific distribution and interpretation.[2]

The expression *rely* (just as the expression *ruly/cahoots*) may or may not have an interpretation on its own. When *rely* merges with a location expression

2. See Everaert (2010) for an explicit proposal for how l-selection is represented in the lexicon.

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headed by *on*, however, the phrase that dominates them both acquires a special interpretation. Only arguments that are sufficiently local to the root may induce idiomatic interpretations (Marantz 1984). The very limited distribution of l-selected phrases is thus proposed to be a product of their idiom-like status.[3]

6.3 Reflecting on Our Miniature Functional Hierarchy

There is a conceptual puzzle that I have not yet addressed, namely, what is so special about *v*? If every preposition is an argument introducer, just as *v* is, why is *v* endowed with the unique ability to merge with both VPs and other XPs? In other words, why does our functional hierarchy single out the *v*-VP relationship with an explicit [·*V*·] feature on *v* but leave the position of non-DPs unspecified? On an alternative view of the verbal domain with a more detailed functional hierarchy (cf. Pylkkänen 2008; Ramchand 2008), several argument introducers each have a privileged position in the clausal spine, making none more privileged or distinctive than the others.

The present theory therefore contains a stipulated categorial distinction among argument introducers that is unaccounted for: *v* vs. V vs. P, where *v* introduces VPs, DPs and XPs, V introduces DPs and XPs, but P only introduces DPs. Despite this stipulation, I argue that the present theory is conceptually simpler than alternatives with a more detailed functional hierarchy.

Some aspects of the categorial distinctions I have made are logical consequences of Feature Maximality: that is, the notion that a head can only introduce one constituent of a particular category rather than multiple. If a single head could introduce multiple DPs (with, e.g., multiple [·*D*·] features), there would be no need for multiple argument-introducing heads in the first place. We could imagine verbs with an unconstrained number of DP arguments, all of which were base generated within the same projection.

3. As Merchant (2019) argues, it may not actually be locality with the *root* that is required for successful l-selection, but rather locality with the category that combines with the root. In other words, it is locality with V that is required for the complement of *rely* rather than locality with the acategorial root $\sqrt{rely}$ itself. I don't think this distinction is terribly important for my purposes—the point is that *on the bus* would not receive the same interpretation if it were instead *v*'s complement instead of V's complement. In the case of *rely*, however, it could actually be argued that the root is doing the selecting instead of V, given that its nominalization also requires an *onP*: *reliance on the bus*. On a view in which the root l-selects, however, the fact that *on* is not adjacent to the root in *reliance on the bus* poses a bracketing paradox along the lines of D. Pesetsky (1985).

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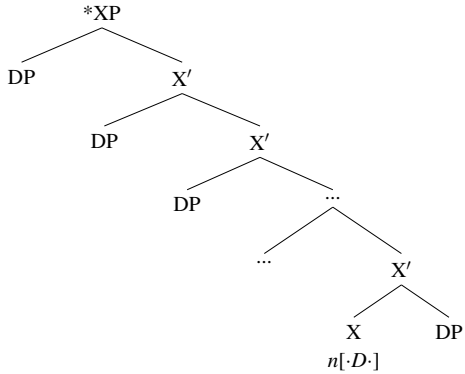
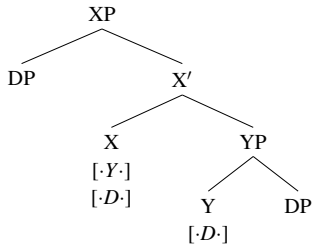
(260) Feature Maximality blocks n>1 DPs in a single phrase.



The fact that only one DP is licensed per maximal projection means we need at least two heads with [·*D*·] to build a transitive clause. One of those heads also needs to have a second feature in addition to [·*D*·] in order to be able to merge both with a DP argument and with the other projection. Thus, the minimum requirement for building a transitive clause is that we have two functional projections, both of which introduce DPs and one of which introduces the other.

(261) 2DP clauses require two heads with [·*D*·] and an extra feature for clause building.



If the features in (261) were the only features on these heads, then we would not be able to build clauses with any other (selected) constituents besides those two DPs without adding new functional projections to the clausal spine. Clausal and prepositional arguments, for example, would entail a new functional projection with at least two features: a feature to license the clausal/prepositional argument and a feature to merge that projection with the main clause.

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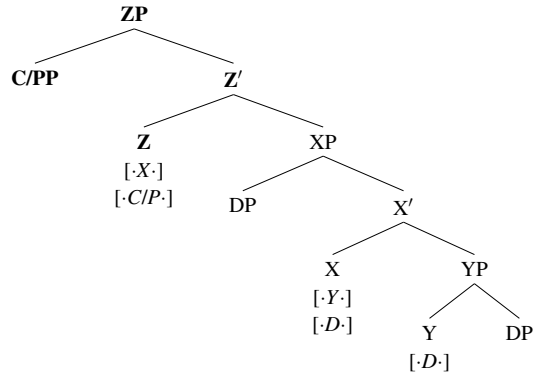
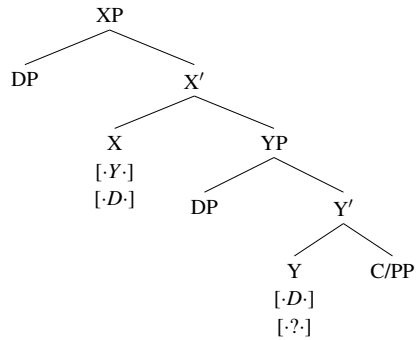
(262) A third argument would entail an extra projection with two Merge features.



Chapter 4 offered arguments that there is no c-selection for clausal or prepositional arguments. The addition of an entire functional projection whose sole function is to introduce clauses or prepositions therefore seems suspicious. A much simpler transformation on the tree in (261) would have been to endow Y with an additional feature (so it has the same number of features as X) that can be checked by clausal and prepositional arguments, as in (263).

(263) Giving Y an extra feature licenses 2DPs + a clausal/prepositional argument.



Having two functional projections, each of which can host a DP plus something else, is therefore the minimum requirement for having a transitive clause with an additional selected phrase such as a PP or CP. While the number of features on these two heads stems from a logical property of the system, the specification of those features is only partly entailed by the system. We could imagine either of two possible specifications for X and Y's second features: specific or nonspecific. If these features are specific, then X can only merge

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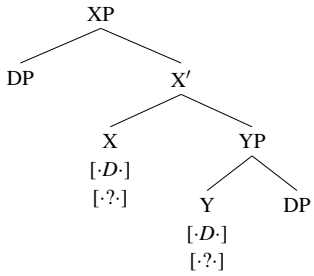
with a YP to check its non-DP feature—it couldn't have merged with a ZP. If these features are nonspecific, then X can in principle merge with anything—its complement did not have to be Y.

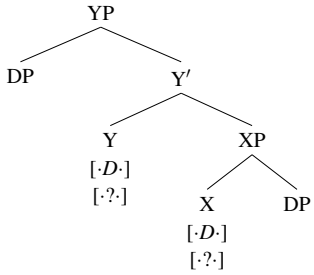
Chapter 4 argued that the feature on Y that licenses CP/PP arguments is nonspecific, meaning that it can be checked by anything. This move allowed Merge features to be assigned to categories rather than specific lexical items, capitalizing on the observation that the set of possible verb phrases is far smaller than the set of lexical verbs. Thus Y could host any kind of complement in order to satisfy the variable demands of different lexical items.

The simplest possible system would likely minimize the number of distinct kinds of syntactic objects. It would therefore be desirable to reduce the two heads X and Y to one and the same kind of functional head. Given that Y was argued to have [·*D*·] and an unspecified feature, this simplest possible theory would also endow X with [·*D*·] and an unspecified feature. On this theory, XP and YP could come in any order in any clause because each could use its unspecified feature to host the other.

(264) a. X introduces Y with its unspecified feature.



b. Y introduces X with its unspecified feature.



Empirically, however, we find a different picture. Active transitive clauses regularly make agent-like DPs the argument of the higher projection, suggesting that *something* must distinguish the two structures in (264) (i.e., something must tell you which lexical item corresponds to which terminal node such that

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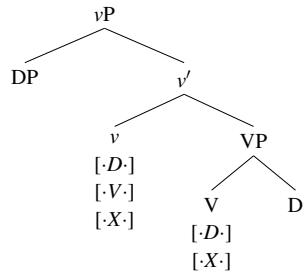
the higher argument is always the argument of the agent-assigning head, and so on). I proposed to make this distinction categorial, in the sense that the two projections have different feature bundles, and refer to different lists of vocabulary items and encyclopedia entries in the lexicon. This choice led to a small functional hierarchy, in which one phrase selects the other and not vice versa.

In addition, some clauses permit multiple non-DP arguments, such as: *Sue explained to Jack that Bill hates carrots*. Recall that the motivation for an unspecified feature on Y was that there was no reason to posit a separate functional projection, whose sole purpose was to introduce prepositional or clausal arguments. By the same logic, clauses with multiple prepositional or clausal arguments should likewise not have such a functional projection, whose sole function is to introduce CP/PPs. We must therefore assume that at least two projections in the clausal spine are like Y in being able to host DP and non-DP arguments. The need for a third feature on one of those heads is then entailed by the possibility of multiple non-DPs in a clause—if both X and Y host a non-DP argument, one must have an additional feature to select for the other. Relabeling X as *v* and Y as V produces the picture of the verb phrase I proposed in chapter 4.

(265) The two functional projections in a transitive clause need to be different categories and host non-DP arguments too.



In sum, the two necessary functional projections for a transitive clause are enough to host every configuration of arguments observed in natural language, provided that each be able to host DPs and non-DPs, and one can host the other. In other words, language needs at least two argument introducers to come in some order to have the kinds of clauses that we see. Nothing about the system says *which* argument introducers need to correspond to those two functional projections, however. We see that subjects of transitive clauses typically receive agent-like theta roles, so we must suppose that the agent-introducing head is the privileged argument introducer that gets to be of category *v*. We could have imagined an alternative universe, however, in which the agent-introducer was

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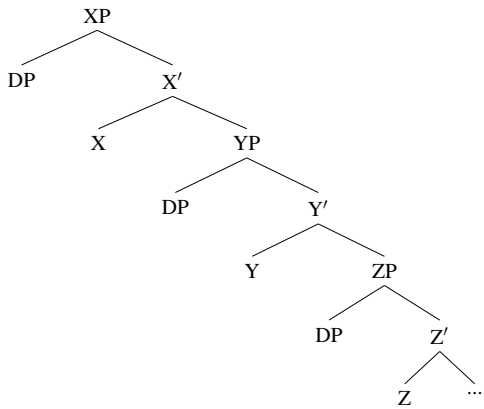
a preposition and the recipient introducer got to be a *v* head. A language in that universe would have a different thematic hierarchy.

There are two related reasons why the present functional hierarchy is conceptually simpler than other, more articulated ones. The first is that the current functional hierarchy captures known selectional profiles without enriching the space of syntactic categories. The second is that it requires fewer features overall.

The functional hierarchy that I have proposed can be reduced to the existence of a $[\cdot V \cdot]$ feature on *v*. If we had a more articulated functional hierarchy, we would need several more features and categories to encode the hierarchy. In a three-part verb phrase, for example, one head needs to introduce VP and another needs to introduce the phrase that introduced VP. In other words, if (266) is a hypothetical functional hierarchy, X would need to have a feature that YP can check, and Y would need to have a feature that ZP can check.

(266) A hypothetical three-part functional hierarchy



These extra features on X and Y could not be underspecified $[\cdot X \cdot]$ features, because nothing besides the syntax could enforce them merging in this particular order. If all of these heads are argument introducers, none of them should s-select any of the others, but should compose via event identification. Therefore, nothing about the meanings of these heads enforces a hierarchy between them. It also seems implausible to appeal to l-selection—if X l-selected for YP, we would expect the meaning of YP to be contextually determined by the presence of X, contra the logic of argument composition we have been discussing.

The only tools we have to describe the hierarchy in (266) are Merge features distributed on heads, in which case we would need more categories and features to describe (266). An unspecified feature on X would never enforce YP as its

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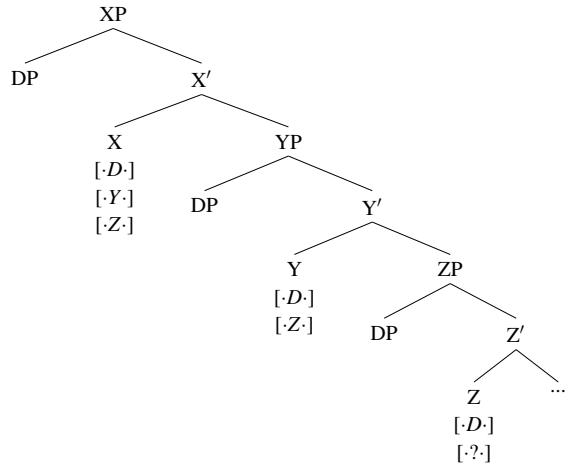
complement, so X must bear [·*Y*·]. Since not every clause contains a YP, X presumably also bears [·*Z*·] so it can take a ZP complement in the absence of YP. Where before we only needed two distinct feature bundles to build a ditransitive clause, we now need three distinct syntactic categories to represent the hierarchy in (266).

(267) A three-part functional hierarchy entails three distinct verbal categories.



Every functional projection above the most embedded one whose position in the clausal spine is *enforced* by some specific feature therefore adds two features to the system: one on the head that selects it, and one that enables it to select for the next one. By having only a bipartite functional hierarchy, I have therefore maximally reduced the number of overall features we need, as well as the categorial distinctions we need to describe verb phrases with up to four arguments.

6.4 Conclusion

One of the main goals of this monograph was to identify syntactic arguments for an underlying set of conditions on verb phrase formation. The interactions between syntactic processes such as passivization, wh-movement, and agreement motivated a picture of the verb phrase with a bipartite functional hierarchy, that is, a functional hierarchy with only two verbal heads, which contain rules for combining these verbal heads with DPs, non-DPs, and each other.

In this chapter, I showed that this picture of the verb phrase, though different from proposals with more articulated verb phrase structures, is compatible

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with existing assumptions about the syntax-semantics interface. In particular, I argued that non-DPs that are not s- or l-selected are interpreted via event identification, and therefore have a flexible distribution.

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7 On Using Wh-Movement to Learn about A-Syntax

In this monograph, I have argued that the distribution of Merge features on heads predicts at-times surprising generalizations about clause structure in different contexts, due to the existence of subset relationships between different elements that might check them. One of the consequences of the theory was an explanation for wh-movement/Voice interactions in Mayan subject extraction and ditransitive passive questions crosslinguistically. The proposal that all kinds of Merge are induced by the same kinds of features and under the same conditions made it possible for the distribution of wh-arguments to disrupt what we consider to be "basic clause structure," thus disrupting case and agreement alignment. This was because wh-arguments possess a superset of the features that non-wh-arguments have, making the distribution of one constrained by the distribution of the other.

The approach to wh-movement/Voice interactions pursued here is quite different in spirit compared to many other proposals of such interactions found in the literature. Elsewhere, it is typically assumed that wh-questions are derived from underlying representations that look identical to their non-wh-counterparts. In other words, assuming that Q'anjob'al transitive clause in (268a) is generated by the grammar, it is often also assumed that the grammar can generate (268b) as well, where the external argument has been replaced with a wh-expression. That Q'anjob'al does not permit (268c), but requires the agent focus construction instead, must therefore indicate constraints on transformation according to this view.

(268) A classical attempt to build a Q'anjob'al subject question:

a. Step 1: Build transitive clause.
   Max y-il-a' naq winaq ix ix.
   ASP A3SG-see-TV CLF man CLF woman
   'The man saw the woman.' (Coon, Pedro, and Preminger 2014, ex. 21a, p. 192)

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b. Step 2: Replace subject with a wh-phrase.
Max y-il-a' maktxel ix ix.
ASP A3SG-see-TV who CLF woman
intended: 'Who saw the woman.' (pre-wh-movement)

c. Step 3: Move the wh-phrase.
* Maktxel max y-il-a' ~~maktxel~~ ix ix?

By contrast, I argued that the underlying representation in (268b) is simply not generated by the Q'anjob'al grammar—instead, the fact that the external argument is a wh-phrase licensed a derivation in which the object A-moves before the external argument is merged, leading to a different pre-movement structure, which feeds AF morphology.

The same move also applies to the profile of ditransitive passive questions crosslinguistically. Previously, one might have thought that the existence of (269a) in Norwegian, for example, would make it possible to generate (269b) as well, where the indirect object is simply replaced with a wh-phrase. If this were true, the ungrammaticality of (269c) would again indicate a need for constraints on transformation.

(269) A classical attempt to wh-move an indirect object from a passive in Norwegian:

a. Step 1: Build passive clause.
Boka ble gitt Jon.
the.book was given Jon
'The book was given to John.' (Holmberg, Sheehan, and van der Wal 2019, ex. 1, p. 678)

b. Step 2: Replace the indirect object with a wh-phrase.
Boka ble gitt hvem.
the.book was given who
intended: 'The book was given to who.' (pre-wh-movement)

c. Step 3: Move the wh-phrase.
* Hvem ble boka gitt ~~hvem~~?

In the present approach, however, (269b) is not generated by the grammar, because the indirect object raises to Spec *v*P before the direct object can. The ungrammaticality of (269c) therefore reduces to the absence of (269b) from the space of possible structures.

More abstractly, this monograph has used the A-syntactic properties of wh-questions to make inferences about pre-movement structures, and has used those structures to motivate a theory of verb phrase syntax that takes into

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account the presence of wh-features. By looking at asymmetries in the behaviors of different wh-arguments in different Voice contexts, we were able to draw inferences about the relative and absolute positions of these arguments and the agreeing heads responsible for observed morphology. The resulting theory generated pre-movement structures that produce certain wh-movement/Voice interactions without having to appeal to constraints on transformation. To fully motivate this approach, however, we must also see why alternative approaches are less successful at explaining these interactions. Furthermore, we should investigate its limits by discussing a wider range of interactions between wh-movement and Voice.

This chapter has two goals. First, I will discuss some previously proposed constraints on transformations that have been used to analyze wh-movement/Voice interactions, and argue that these alternative approaches are not well-suited to explain these phenomena. In addition to technical and empirical problems, we will see that they lack crosslinguistic coverage.

Second, I will discuss a wider range of wh-movement/Voice interactions to situate the present theory in a broader context. The expression "wh-movement/Voice interaction" has been applied to a wide range of phenomena, not all of which share a common explanation. The second goal of this chapter is therefore to identify which kinds of patterns can be captured by the present approach, and which deserve alternative explanations.

7.1 Rejecting an Extraction-Restriction Account of Mayan AF

Recall that in my approach, (52) is grammatical and (53) is ungrammatical because the derivation of subject wh-questions in Q'anjob'al results in the agreement alignment in (52). The agreement alignment in (53) is simply not generated by the grammar when a third-person subject is wh-extracted.

(52) Maktxel max-ach il-**on**-i?
who PFV-B2SG see-AF-ITV
"Who saw you?" (Q'anjob'al Coon, Pedro, and Preminger 2014, ex. 1, p. 180)

(53) * Maktxel max y-il[-a'] ix ix?
who PFV A3SG-see-TV CLF woman
intended: "Who saw the woman?" (Q'anjob'al ex. 21c, p. 193)

By contrast, some analyses of examples like (52) and (53) assume that (53) *is* in principle generated by the grammar, but is not observed due to constraints on movement/agreement/nominal licensing in such a clause. Analyses that make this choice sometimes refer to the contrast in (52) and (53) as a *ban on ergative*

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extraction, thus presupposing that (53) corresponds to a structure that should exist under normal circumstances but is filtered out.

In these approaches, agent focus in (52) "rescues" the language from a total lack of subject wh-questions by providing an alternative construction in which the subject may extract without violating the relevant conditions on the grammar. Any theory of this sort must therefore (1) propose grammatical constraints that are violated in (53), (2) include a structural description of a novel construction (i.e., the agent focus construction), and (3) provide a theory that regulates the distribution of this construction so it only appears when the subject is Ā-extracted.

The logic of analyses that rely on some sort of a ban on subject extraction is cumbersome for the following reason: subject extraction simply does not show a uniform profile for all transitive subjects in these languages. If the claim is that movement from subject position is ruled out for some reason, it becomes a serious task to explain why this restriction is only active for some subjects.

We observed many situations in which a subject looks like it has wh-moved, but the clause does not have AF (participant subjects, with and without participant objects, binding effects, NP objects, and multiple fronting). If subjects are supposed to be unable to move, all of these scenarios in which they apparently *do anyway* must be analyzed either as novel constructions that obviate the restriction on movement, or as non-movement constructions. Good attempts have been made to find independently motivated theories of all of the apparent exceptions to the restriction on subject extraction. However, the resulting picture of each proposal finds little consensus with the others, meaning that the status of each exception is subject to much controversy from the perspective of the other theories.

Let us look at some specific proposals of subject extraction restrictions in Mayan (this is not meant to be a comprehensive list, given that there are many approaches to Mayan AF, but should hopefully be representative of the kinds of restrictions posited for Mayan). Of the following three proposals, two of them (namely Coon, Pedro, and Preminger 2014; Assmann et al. 2015) suggest an approach to AF morphology as a novel flavor of Voice/*v*, which either demotes the object or independently case licenses it to avoid the subject extraction restriction. Erlewine (2016) proposes a different view of AF, which is that subjects may optionally Ā-move from their base position (Spec *v*P) rather than their proposed derived position (Spec TP) to avoid the restriction on movement, but this choice bleeds agreement with the subject (which results in AF).

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(270) Coon, Pedro, and Preminger (2014): Objects outscope subjects in (high-abs) Mayan transitive clauses, Ā-movement of the subject can't cross the object.
[$_{CP}$ Who [$_{TP}$ T ... [$_{vP}$ DP$_{int}$ [$_{vP}$ ~~who~~ [$_{VP}$ ate ~~DP$_{int}$~~?
X

(271) Assmann et al. (2015): Ā-movement of the subject bleeds absolutive assignment on the object.
[$_{CP}$ Who [$_{TP}$ ~~who~~ T ... [$_{vP}$ ~~who~~ [$_{VP}$ ate DP$_{int}$☹?

(272) Erlewine (2016): Subjects move to Spec TP in Mayan transitive clauses, Ā-movement to Spec CP is too short.
[$_{CP}$ Who [$_{TP}$ ~~who~~ T ... [$_{vP}$ ~~who~~ [$_{VP}$ ate DP$_{int}$?
X

The view that AF is a novel flavor of Voice/*v*, needed to circumvent the subject extraction restriction, faces a conceptual problem—these languages all have an antipassive construction, which would achieve the same goal. It is therefore puzzling that high-absolutive Mayan languages don't simply use the antipassive to extract transitive subjects. Why would languages with AF strategies for subject extraction have invented a novel flavor of *v*/Voice, *only* to be used in certain subject extraction contexts, that does the same job as another construction of the language?

On the empirical side, all of these approaches have in common the following issue: making the subject and object participants in each case presumably does not change the fact that the subject would have to cross the object in (270), or bleed absolutive assignment on the object in (271), or move too short a distance in (272). And yet, the person features of subjects and objects apparently regulate whether subject extraction violates the relevant extraction restrictions and therefore requires "rescuing" via the AF construction.

Different authors have different approaches to this problem, including making the subject extraction restriction a violable constraint (Erlewine 2016), or suggesting that participant subjects are base generated high (Coon, Baier, and Levin 2021) [Assmann et al. 2015 don't discuss the person restrictions]. Aside from the person restrictions, they also face individual issues. For example, the fact that bound objects obviate AF means they apparently don't need case from the perspective of Assmann et al. (2015), and somehow allow the subject to perform too-short movement steps from the perspective of Erlewine (2016) for reasons that are unclear.

The approach that I outlined in chapter 3 therefore has at least one clear advantage: on my approach, subject extraction in Mayan is a homogeneous

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process from the perspective of the syntax, which has nonhomogeneous effects on the output of Agree, depending on the features and positions of arguments. Every construction in which a subject looks like it has moved can in principle be analyzed as a subject extraction context, whether or not it co-occurs with AF. The distribution of AF is independently predictable from my proposed derivation for subject extraction, combined with the sensitivities of the φ-probes that control the morphology. The contexts that are treated as "exceptions" to the AF requirement on other views are contexts in which AF either does not arise on my view (person effects, NP objects, multiple fronting), or only arises in a non-convergent derivation (WCO blocks AF in certain binding configurations).

7.2 Rejecting an Extraction-Restriction Account of the DOMA

I have suggested that in passives of ditransitives, wh-indirect objects may bleed subject-hood of another argument by moving too early and checking the feature that licenses A-movement in the process (due to Weak Economy). This proposal was motivated by the generalization that only languages whose indirect objects can be passive subjects exhibit this interaction. We saw that languages without indirect object passives never blocked a direct object passive when they wh-moved, suggesting that the wh-movement/Voice interaction we observe is a kind of bleeding effect. However, there is an alternative way of viewing the puzzle, taken up by Holmberg, Sheehan, and van der Wal (2019), which treats this wh-movement/Voice interaction as evidence for constraints on wh-movement from certain contexts. I will detail their analysis now and show why the present approach is needed.

Holmberg, Sheehan, and van der Wal (2019) assume firstly that passivization precedes wh-movement. With this assumption, the ungrammaticality of (273a) is interpreted as evidence for a restriction on wh-moving the indirect object from a clause in which the direct object has already raised to subject position. To explain this restriction, they propose a modified theory of phase impenetrability combined with a theory of contextually determined phase-hood. Together, these assumptions treat the observed restriction in (273b) as evidence for a problem with the derivation in (273b).

(273) a. *$\text{DP}_{io,wh}$ DP_{do} verb-PASS.

b. Holmberg, Sheehan, and van der Wal (2019): Can't wh-move an indirect object past a passivized direct object.

$[_{CP}\ \text{DP}_{io,wh}\ [_{TP}\ \text{T}\ \ldots\ [_{ApplP}\ \text{DP}_{do}\ [_{ApplP}\ \sout{\text{DP}_{io,wh}}\ [_{VP}\ \text{V-pass}\ \sout{\text{DP}_{do}}$?

X

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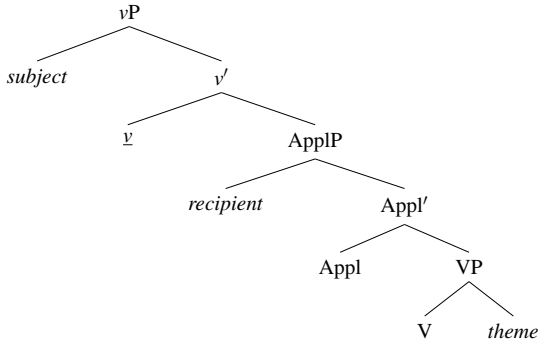
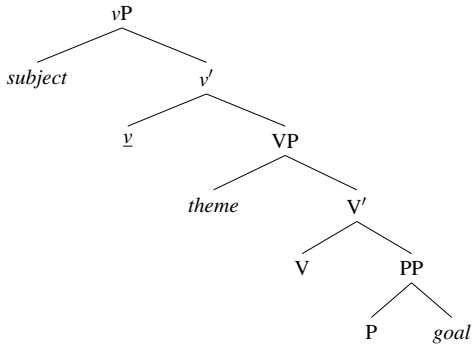
The ingredients of their theory are in (274) and (275). First, they adopt the structures in (274) as the two kinds of ditransitive clauses available to languages. Second, they assume a stronger version of the Weak PIC, in which only the highest specifier of a phase head is accessible to wh-movement. Lastly, they propose that different heads may be phases in active vs. passive contexts; the highest argument introducer assumes phase status in each case. As a result, *v* is proposed to be a phase head in active clauses, because it introduces the transitive subject, while Appl/V is proposed to be a phase head in passive clauses, depending on the ditransitive construction under consideration.

(274) The two active ditransitive structures, phase head is *v* (underlined):

a. Double object construction (e.g., *Sue gave the cat a treat*).



b. Prepositional dative construction (e.g., *Sue gave a treat to the cat*).



(275) a. Weak PIC/PIC2 (Chomsky 2001): Given a structure $[_{ZP}$ Z . . . $[_{XP}$ X $[_{HP}$ α [H YP]]]] where H and Z are phase heads, the domain of H is not accessible to operations at ZP; only H and its edge are accessible to such operations.

i. Revision (Aldridge 2004, 2008; Bošković 2016): The edge of a phase is the outermost specifier of the phase head.

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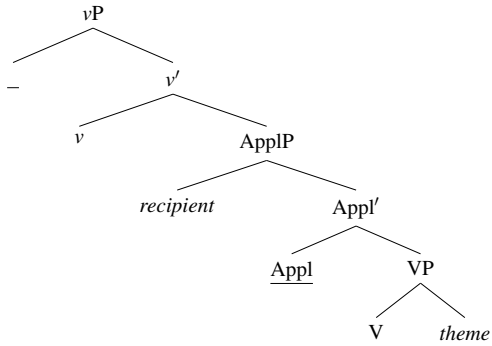
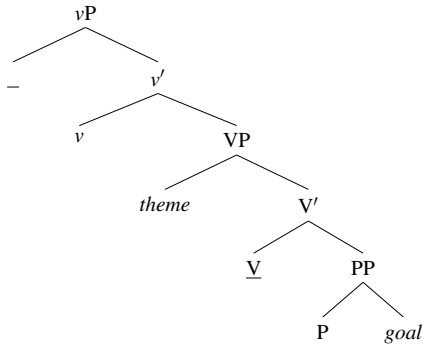
b. Flexible phase theory (Holmberg, Sheehan, and van der Wal (2019) example 30, p. 690, based on Bošković 2015, 617): α is the head of a phase Ph making up a thematic domain if and only if α is the highest head introducing an argument in Ph.

(276) The two passive ditransitive structures, phase head is *Appl*/*V* (underlined):

a. double object construction



b. prepositional dative construction



Finally, they propose that direct object passives in the double object construction are derived by raising the direct object past the indirect object to the edge of ApplP [shown in (277)]. A direct object passive in a double object construction thus makes the recipient an inner specifier of the ApplP phase, which is inaccessible to wh-movement. The proposed restriction on indirect object wh-movement from a direct object passive is analogous to Coon, Pedro, and Preminger's (2014) proposed restriction on subject wh-movement in high-absolutive Mayan languages, following Aldridge's (2004) approach to related facts in Austronesian. Importantly, they propose that an Anti-locality constraint keeps the recipient stuck as the inner specifier: it cannot raise past the theme to create a new, outer specifier of ApplP.

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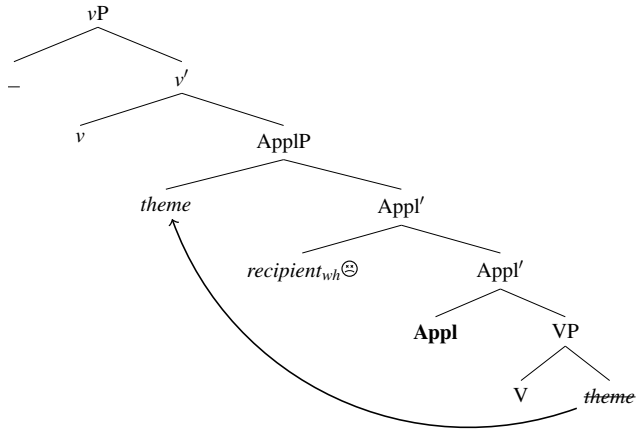
(277) Direct object passive of a double object construction: blocks wh-movement of the recipient



This approach faces two main empirical challenges. First, their analysis predicts that every language with direct object passives of double object constructions should exhibit this wh-movement/Voice interaction. If (277) represents the only way to form a direct object passive of a double object construction, wh-movement of an indirect object in that context should be universally banned. However, we saw in chapter 5 that several languages with direct object passives of double object structures lack the wh-movement restriction on indirect objects in those contexts. These were the languages that lack indirect object passives.

The second empirical challenge pertains to the behavior of wh-movement from prepositional dative constructions. In (278), we can see that making the indirect object a prepositional phrase obviates the restriction, showing that passives of prepositional dative constructions do not exhibit the trapping effect proposed for double object constructions.

(278) PP-IOs can wh-move in the passive.

a. **To** whom was the book given?

b. **Til** hvem ble boka gitt?
to who was book.the given
'To whom was the book given?' *Norwegian*

In the passive of a prepositional dative, their theory requires V to be the phase head given that it introduces the theme, and no higher head introduces any arguments. However, if this is true, the prepositional phrase must move to

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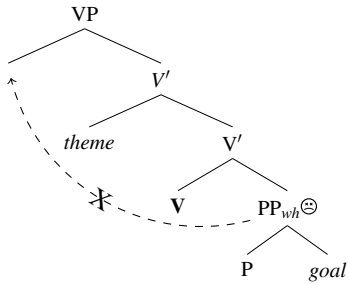
the edge of V in order to wh-move. Doing so, however, would violate Anti-locality (a constraint that they adopt elsewhere in the paper): no feature can license movement from the complement of some head to edge of that same head (Abels 2003). Thus, direct object passives should block PP-indirect object wh-movement as well, contrary to fact.

(279) Pied-piping faces an Anti-locality problem.



In sum, Holmberg et al.'s theory predicts that every language's direct object passives (regardless of which ditransitive structure is used) should block recipient wh-movement. However, we find that only some languages do and only in the double object construction, not the prepositional dative construction. While it may be possible to reconcile these facts with Holmberg et al.'s theory, for instance, by positing additional covert structure in certain contexts or accepting parametric variation within phase theory, I propose that these facts are better explained by an alternative approach. The proposed alternative approach focuses on morphosyntactic properties of indirect objects in different languages/contexts, rather than the edge properties of different clause types. A child trying to figure out whether their language has this wh-movement/Voice interaction therefore only needs to know two facts about their language: (1) whether it has indirect object passives, and (2) what DPs look like, in order to generalize to wh-movement in passives.

7.3 The Ergative Extraction Restriction Revisited

So far, I have argued against several authors' proposed extraction restrictions, arguing that they cannot adequately explain wh-movement/Voice interactions found in Mayan subject questions or in passives of ditransitives crosslinguistically. I now address the broader research tradition that these kinds of restrictions belong to in order to situate the present contribution relative to the rest of the literature.

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Both of the proposals advanced by Coon, Pedro, and Preminger (2014) and Holmberg, Sheehan, and van der Wal (2019) are variants of a broader class of analyses used to explain the so-called "Ergative Extraction Restriction/Constraint" (henceforth EER/C). These analyses are meant to explain why, in several ergative languages, wh-movement of an external argument only occurs in clauses that otherwise do not assign the external argument ergative case. For example, in West Greenlandic, a relative clause where the external argument has relativized must be pronounced in the antipassive (280a). Regular transitive alignment, which would license an ergative subject, is ruled out, as in (280b).

(280) West Greenlandic subject relatives (Bittner 1994, ex. 17,19, p. 58)

a. angut [t_{abs} aallaam-mik tigu-si-sima-su-q]
man.ABS gun-INST take-AP-PFV-REL.ITV-SG
'the man who took the gun' *antipassive*

b. *angut [t_{erg} aallaat tigu-sima-sa-a]
man gun.ABS take-PFV-TV.PTCP-3SG
intended: 'the man who took the gun' *transitive*

The standard analysis of such effects, which can be found in various forms in works such as Campana (1992), Ordóñez (1995), Bittner and Hale (1996), Aldridge (2004, 2008), and Tollan and Clemens (2022), among others, is that languages that exhibit this restriction systematically promote their objects to a position above the external argument in a transitive clause. Something about this relative configuration of subject and object prevents the transitive subject from wh-moving to Spec CP, in which case an alternative construction must be used to license wh-movement. The alternative construction has the property of demoting the object so that it neither c-commands the subject nor permits the subject to be assigned ergative case. Thus, the only constructions that permit extraction of an external argument are those in which the external argument is not assigned ergative.

(281) Standard analysis of the EER/C

a. Transitive clauses ban wh-movement of the external argument.
[$_{CP}$ DP-ERG [... [DP-ABS ... [$_{vP}$ ~~DP-ERG~~ *v* [$_{VP}$ V ~~DP-ABS~~?
X

b. Antipassive clauses permit wh-movement of the external argument.
[$_{CP}$ DP-ABS [... [$_{vP}$ ~~DP-ABS~~ *v* [$_{VP}$ V DP-OBL?

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The conjecture that a c-commanding object should block wh-movement of a subject requires some amendment to theories of wh-movement, since the classical picture of wh-movement should permit movement of a wh-element past a c-commanding nominal. Technical implementations of the above approach aside, however, the enterprise faces several problems of generality. As discussed by Polinsky (2016) and Deal (2016), observe that the restriction in (280) only occurs when an external argument is *relativized*. Regular wh-movement of an ergative argument is permitted in West Greenlandic (similar splits between relativization and wh-movement are observed in Chukchi [Polinsky 2016, pp. 90–91], Kalaallisut [Yuan 2018, pp. 134–135], and potentially Tagalog, where non-DP extraction patterns differently than DP relativization [Hsieh 2020]).

(282) Kia uqaatig-aa?
who.ERG talk.about-3SG.3SG.Q
'Who talked about it?' (Fortescue 1984:23)

Given that the restriction in (280) is not observed in Ā-constructions more generally, it becomes less obvious that this restriction truly reflects constraints on Ā-movement. This fact has recently led several authors to pursue treatments of the EER/C as properties of relative clauses more generally rather than evidence for restrictions on Ā-movement. For example, Polinsky suggests that ergative arguments in these languages are PPs, which cannot be replaced by operators under relativization, though they can wh-move more generally. Deal suggests that relative probes in some languages can be case discriminating, requiring relativized elements to bear nominative/absolutive. Hsieh argues that Tagalog relative clauses employ a non-movement strategy, whose properties require the in situ operator to be in a position that assigns nominative.[1] Thus, prior consensus about the EER/C reflecting constraints on wh-movement is waning, suggesting that extraction restrictions may not be the best strategy for accounting for wh-movement/Voice interactions in general.

In addition to the challenge presented by wh-movement/relativization splits, the range of wh-movement/Voice interactions that we observe also presents a challenge to the view in (281). According to (281), the only way to license extraction of an ergative subject is to demote the object in some way, so that the offending c-command relationship doesn't arise. In this view, we would not expect a wh-movement/Voice interaction to require *subject* demotion in

1. Important to note is that none of these analyses extend to the wh-movement/Voice interactions discussed in this monograph either. The wh-movement that we have been discussing is (a) movement, and (b) not case-discriminating—dative arguments in Norwegian are permitted to wh-move more generally, and we saw several examples of ergative extraction in Mayan where no agent focus was used.

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order to extract an ergative. However, this is exactly what we find in Salish and Nukuoro. In both of these languages, extraction of an ergative is either banned or dispreferred in normal transitive clauses. One of the "rescue" strategies for licensing ergative extraction, however, is the *passive*. I argue that such an interaction is straightforwardly predicted by the approach to Mayan in chapter 3, but is surprising on extraction restriction views of the EER/C.

7.3.1 Salish and Nukuoro

Here I present some data from Salish and Nukuoro, which both show a wh-movement/Voice interaction. A prominent feature of these wh-movement/Voice interactions is that subject questions prefer the clause to be in the passive in both languages.

Starting with Salish, the following draws primarily from the discussion and findings in Davis, Gardiner, and Matthewson (1993). According to their description, the three Northern Interior Salish languages St'át'imcets, Nlaka-pamuxcín, and Secwepemctsín show something like an ergative extraction restriction, with properties reminiscent of Mayan Agent Focus. Important to note, however, is that ergative extraction isn't really banned, strictly speaking. Rather, there is a strong tendency to interpret transitive wh-questions as object rather than subject questions. When the context otherwise disambiguates between the two readings, or when the subject binds the object, ergative extraction is permitted, as in (283).[2]

(283) Ergative extraction with transitive morphology (ex. 10, p. 84)

a. šwat kʷu áċx̲-ən-aš ta nḵyáp-a
who IRR see-TV-3SUBJ DET coyote-DET
'Who saw the coyote?' (St'át'imcets)

b. šwéty̓ k x̲ʷi-st-és ɣ-qɛ́ʔčə-s
who IRR like-CAUSE-3SUBJ DET-father-3POSS
'Who likes his/her father?' (Secwepemctsín)

2. As discussed by Coon, Baier, and Levin (2021) (following observations and discussion from J. Dayley [1981] and Aissen [1992]), some high-absolutive Mayan languages also permit external arguments to extract without agent focus if the method of extraction is *topicalization* rather than wh-movement or focus-fronting. They argue that such cases involve a base generated high topic, rather than genuine wh-extraction, though it may alternatively suggest that agent focus is more optional than otherwise thought.

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The preferred method of extracting an external argument (or at least a less context-sensitive strategy) is to use the passive, or at least to put passive morphology on the verb.[3] The moving external argument doesn't appear to have any prepositional or oblique marking in these contexts, but the morphosyntactic alignment of the clause is passive.

(284) Salish transitive subject wh-questions (Davis, Gardiner, and Matthewson 1993, ex. 12–13, pp. 85–86)

a. šwat kʷu acx̲-ən-əm š-Bill l-ta čitxʷ-š-a
who IRR see-TV-PASS NOM-Bill LOC-DET house-3SG.POSS-DET
'Who saw Bill in his house?' (St'át'imcets)

b. šwet k míl̓-əm-t-əm-uš ɬ-e šmúɬeč
who IRR visit-REL-TV-PASS-CONJ EP-DIR woman
'By whom was the woman visited?' (Nlakapamuxcín)

c. swɛtỳ k č-t-ɛ́m-əs
who IRR punch-TV-PASS-CONJ
'By whom was (s)he punched?' (Secwepemctsín)

Davis, Gardiner, and Matthewson (1993) argue that there is indeed covert oblique/prepositional marking on the wh-moved external argument in Nlakapamuxcín and Secwepemctsín, because both use a special verbal morpheme whenever a non-DP is extracted (*-uš, -(w)*əs). Since that verbal morpheme is present in (284b,c), they suggest the wh-extracted agent must therefore be covertly oblique. However, it is worth noting that a non-wh-extracted passive agent is usually pronounced with *overt* oblique marking, as evident from the minimal pair in (285). Here we see that a wh-moved passive agent is unmarked for case, but an in situ passive agent has oblique marking. Moreover, St'át'imcets provides no evidence for an oblique analysis of wh-moved external arguments—no verbal morphology indicates that the external argument in (284a) is covertly oblique.

(285) Oblique vs. non-oblique marking in Nlakapamuxcín wh-passives (ex. 31, p. 92)

a. šwet k-ỳe-mín-t-əm-uš k-škíxəʔ-š
who IRR-like-RDR-TV-PASS-CONJ IRR-mother-3SG.POSS
'Who is her mother liked by?'

3. St'át'imcets also has another strategy for wh-moving an external argument, called the *topical object* construction. I focus mainly on the passive, however, because it is more surprising from the perspective of the other theories.

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b. šwet k-ỳe-mín-t-əm tə-k škíxəeʔ-š
who IRR-like-RDR-TV-PASS OBL-IRR mother-3SG.POSS
'Who is liked by her mother?'

Nukuoro shows this effect even more prominently than the Salish languages. Drummond (2021) argues that Nukuoro shows a strong ergative extraction restriction in requiring an intransitive Voice whenever a transitive subject is extracted. However, the intransitive Voice that is employed is the passive. In (286), we see that the passive alternation in Nukuoro always pronounces the external argument with overt oblique marking. When an external argument is wh-moved, passive morphology on the verb is *required* (unlike in Salish, where it is merely preferred), though no oblique marking on the subject is observed.

(286) The Nukuoro passive alternation (ex. 17, p. 32)
a. Soni gu hagaduu dogu hale.
Johnny INCH build my house
'Johnny built my house.'
b. Dogu hale ne hagaduulia ina (i Soni).
my house PFV build.PASS PASS OBL Johnny
'My house was built (by Johnny).'

(287) Wh-movement of a transitive subject in Nukuoro (pseudocleft) (ex. 19, p. 34)
a. *Go ai [_ ne tugi Soni]?
FOC who PFV hit Johnny
intended: 'Who hit Johnny?'
b. Go ai [ne duugia ina Soni _]?
FOC who PFV hit.PASS PASS Johnny
'Who hit Johnny?' (lit. *Who was Johnny hit by?*)

These data are a problem for the analysis in (281) for two reasons. First, if a promoted nominative/absolutive object blocks subject extraction, the passive construction should be the last place that we observe extraction of the external argument, since the very function of the passive is to promote an object and demote the external argument to oblique status. Yet Salish and Nukuoro show that the passive actually *licenses* extraction of the external argument. Second, in at least two of the languages we have seen, passive morphology on the verb does not correspond to oblique marking on the external argument (for the other two languages, it is unclear whether there is covert oblique marking present), suggesting a divergence between the morphosyntactic alignment of the clause and its valency. Such a mismatch between verbal and argument morphology

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is unexpected on any view in which the underlying representation of a wh-question should be identical to that of its non-wh-counterpart. The non-wh-counterpart of (287b) should be like (286b), where the external argument bears oblique morphology.

The theory outlined in this monograph faces neither of these problems. First, I have not posited any constraints on wh-movement—I assume that wh-movement is non-local in the standard sense, making it insensitive to intervening nominals. On that view, the position of the object should not affect the wh-movement prospects of an external argument regardless of whether the clause is active or passive. Thus, the availability of external argument wh-movement in passives is no surprise.

Second, I have shown that UG provides two different derivations for transitive subject wh-questions, one of which promotes the external argument as the highest nominal in the clause, and the other of which promotes the internal argument as the highest nominal in the clause. We saw that several Mayan languages pronounce this second derivation with the agent focus morpheme, but we could imagine another language pronouncing the verb in the passive in this context, given its surface similarity to a passive clause. Nothing about this derivation required the external argument to be oblique, however. Thus, the present theory creates an opening for passive morphology to occur on clauses with multiple possible derivational histories. Perhaps some languages use passive morphology whenever an internal argument is promoted, which can be achieved either by demoting the external argument (i.e., by making it oblique) or by making the external argument a wh-phrase (which allows it to merge in a lower position).

As a result, the crosslinguistic picture of ergative extraction suggested by this monograph is more in line with the range of patterns we observe, as compared to analyses based on extraction restrictions. I have proposed that wh-movement can interact with Voice by making unexpected arguments the outermost specifier of *v*P in different contexts, which impacts agreement alignment. In transitive subject questions, we saw that UG offered two possible derivations, each of which corresponded to a different morphosyntactic alignment: transitive vs. intransitive. As expected, some languages' subject questions show transitive morphology while others show intransitive morphology, providing evidence for parametric variation regarding which of these derivations is utilized.[4] Whether that intransitive morphology is homophonous with other intransitive morphology (such as the passive morphology in Salish and Nukuoro), or special to

4. Salish may be an exception where both parametric options are available to the same language, given that ergative extraction could optionally correspond to transitive morphology.

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subject extraction contexts (as in Mayan), may reflect arbitrary differences in the pronunciation of certain heads.

In intransitive questions, the choice of which internal argument to make the outer specifier of *v*P likewise affected agreement outcomes, leading to either direct or indirect object passives. We saw that wh-movement impacted this choice as well, due to Weak Economy. Thus the same logic that characterized wh-movement/Voice interactions in ergative extraction predicted an interaction between passive and wh-movement in ditransitive clauses as well.

We saw that some languages generally don't exhibit wh-movement/Voice interactions in wh-questions, though they may show one in relative clauses (e.g., West Greenlandic). I suggested that such interactions may deserve a different explanation, following work by Polinsky (2016), Deal (2016), and Hsieh (2020), which leverages properties of relative clauses and the heads involved in their construction rather than Ā-movement more generally.

7.4 Wh-movement/Voice Interactions at Large

We have discussed two kinds of wh-movement/Voice interactions. The logic of these two was similar—in both cases, introducing a certain kind of wh-element affected prospects for subject-hood with different consequences. In one case, the wh-element merged in a lower position than usual, and was therefore inaccessible to subject agreement though it was accessible to wh-movement. In another case, the wh-element was higher than usual, making it the necessary target for subject agreement. These choices were predictable from different orders of feature-checking that were made available in different contexts.

These two kinds of wh-movement/Voice interactions also share another similarity: they only appear in specific contexts. In the high-absolutive Mayan languages, it was not generally true that wh-moving elements had different agreement prospects than their non-wh-counterparts. Only transitive subjects were affected, and even then it was only transitive subjects with certain properties that affected agreement outcomes (e.g., nonparticipants that didn't bind the object). Similarly, in the languages with the double object movement asymmetry, it wasn't the case that wh-elements generally needed to be the subjects of their clauses. Only indirect objects in passive contexts showed this requirement. It was the fact that these wh-movement/Voice interactions arose asymmetrically for different arguments and contexts that enabled us to draw inferences about verb phrase syntax, which motivated the overall approach.

That said, these two phenomena are not the only ones that have been described as exhibiting an interaction between wh-movement and Voice. There

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are also languages in which wh-movement has more general effects on agreement and Voice. Here, I introduce some of these patterns and address whether and how the present theory bears on this wider range of interactions. Though the present theory is certainly compatible with the existence of these additional wh-movement/Voice interactions, these additional phenomena don't provide the same kind of insight into A-syntax, and thus were not used to motivate the approach. Instead I argue, following others, that they are better explained by properties of agreeing heads themselves, and their morphological exponence.

One well-known wh-movement/Voice interaction that has been widely studied in certain Austronesian languages as well as the Nilotic language Dinka Bor is called the "pivot-only" restriction by Erlewine, Levin, and van Urk (2017b) (see especially Aldridge; Aldridge [2004; 2008], Rackowski [2002], Rackowski and Richards [2005], Pearson [2005], van Urk [2015], Erlewine, Levin, and van Urk [2017], and Hsieh [2020] for discussion of this pattern). These languages have a rich Voice system, which marks the grammatical function of the surface subject, or "pivot," of the clause. For example, "Subject/Agent Voice" is used when the pivot is an agent, while "Object/Patient Voice" is used when the pivot is a patient, and so forth. In these languages, attempting to wh-extract or relativize an argument requires it to be the pivot of its clause, as shown in (288) and (289) for Malagasy and Dinka respectively. More specifically, attempting to wh-move a patient in the agent voice, or vice versa, is ruled out.

(288) Extraction restrictions in Malagasy (Malagasy; Pearson 2005, 412–413), from van Urk (2015, ex. 10, p. 65)

a. ny mpamboly [$_{CP}$ (izay) **mamono/*vonoina/*amonoana** ny
DET farmer C SV.kill/OV.kill/OBLV.kill DET
akoho amin'ny antsy]
chicken with-DET knife
'the farmer who is killing chickens with the knife'

b. ny akoho [$_{CP}$ (izay) **vonoin'/*mamono/*amonoan'** ny
DET chicken C OV.kill/SV.kill/OBLV.kill DET
mpamboly amin'ny antsy]
farmer with-DET knife
'the chickens which the farmer is killing with the knife'

c. ny antsy [$_{CP}$ (izay) **amonoan'/*mamono/*vonoin'** ny mpamboly
DET knife C OBLV.kill/SV.kill/OV.kill DET farmer
ny akoho]
DET chicken
'the knife that the farmer is killing chickens with'

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(289) Same restrictions in Dinka (ex. 11, p. 66)

a. móny [$_{CP}$ **càm/*c**ɛ́ɛ**m/*c**ɛ́ɛmɛ̈ cuı̱̈n nɛ̈ păal]
man.CS eat.SV/eat.OV/eat.OBLV food P knife
'the man who is eating food with a knife'

b. cuı̱̈n [$_{CP}$ **c**ɛ́ɛ**m/*càm/*c**ɛ́ɛmɛ̈ mŏc nɛ̈ păal]
food eat.OV/eat.SV/eat.OBLV man.GEN P knife
'the food that the man is eating with the knife'

c. păal [$_{CP}$ **c**ɛ́ɛmɛ̈**/*càm/*c**ɛ́ɛ**m** mŏc cuı̱̈n]
knife eat.OBLV/eat.SV/eat.OV man.GEN food
'the knife that the man is eating food with'

In these languages, the observed interaction between wh-movement and Voice is not limited to a particular Voice or a particular kind of moving element. It is also insensitive to factors such as the person features of the moved element. Voice simply always tracks the grammatical function of the wh-moving element, whatever that may be. This kind of wh-movement/Voice interaction therefore obscures the underlying processes involved in building the verbal domain, since the interaction applies in an analogous way to every kind of wh-moving element. It is therefore natural to suppose that the interaction does not solely reflect knowledge of UG, but rather must also reflect some property of the attracting head, which learners must infer.

Some existing theories of the pivot-only restriction support this perspective. For example, van Urk (2015) analyzes the pivot-only restriction in Dinka in relation to the distribution and content of φ-probes in Dinka. He suggests, following Coon and Bale (2014), that Dinka has *composite* probes, which can search jointly for elements with A and Ā-features. Movement to satisfy such a probe ends up having both A and Ā-properties, by affecting case and agreement outcomes (i.e., correlates of Voice), while having the locality profile of Ā-movement.

Another kind of wh-movement/Voice interaction is often called "anti-agreement" (Ouhalla 1993) or "wh-agreement" (Chung and Georgopoulos 1988; Georgopoulos 1991; Chung 1994), depending on the pattern. In languages with wh/anti-agreement, wh-movement induces special agreement morphology on the verb, which wouldn't otherwise appear in a corresponding non-wh-context and doesn't look like Voice morphology otherwise found in the language. An example of this effect comes from the West Caucasian language Abaza, as described originally in O'Herin (2002), though the present discussion builds on descriptions found in Baier (2018).

Abaza has two agreement slots on the verb, one that tracks the features of ergative arguments and another that tracks the features of absolutive arguments.

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Each of these agreement paradigms uses a special form when the element it should have agreed with is a wh-element, as shown in the tables in (290) and (291). The form of wh-agreement that appears in the ergative paradigm is unique in that it only appears when the goal is an Ā-element. By contrast, wh-agreement in the absolutive paradigm looks more like a kind of anti-agreement, taking a default form that is found elsewhere in the paradigm for third-person elements.

(290) Abaza ergative agreement (O'Herin 2002, 55)

	1	2F	2M	3F	3M	3INAN	Ā
SG	*s-*	*b-*	*w-*	*l-*	*y-*	*a-*	*z-*
PL	*h-*	*ʃʷ-*	*ʃʷ-*	*r-*	*r-*	*r-*	*z-*

(291) Abaza absolutive agreement (O'Herin 2002, 63)

	1	2F	2M	3F	3M	3INAN	Ā
SG	*s-*	*b-*	*w-*	*d-*	*d-*	*y-*	*y-*
PL	*h-*	*ʃʷ-*	*ʃʷ-*	*y-*	*y-*	*y-*	*y-*

Importantly, Baier argues that this kind of wh/anti-agreement has nothing to do with wh-movement, per se, but rather reflects morphological properties of the agreeing heads instead. He observes that in Abaza, wh-agreement also targets elements that are bound by an Ā-operator, even though those elements may not have wh-moved themselves. This is shown in (292), where binding of a pronoun by a wh-element leads to DP-internal wh-agreement with the bound pronoun.

(292) [$_{DP}$ *pro*$_i$ **z**$_i$-qk^{w}marga] ayʃa ac'axk^{j} **d**əzda$_i$ yə-qa-z-chwaxəz?
POSS.WH-toy table under who 3SG-PV-ERG.WH-hide
'Who$_i$ hid his$_i$ toy under the table?' (272, from Baier 2018, ex. 28, p. 15)

Baier concludes that vocabulary insertion rules may be sensitive to the presence of wh-features, and can thus affect an agreement paradigm whether or not movement has taken place. If this is right, it suggests that the order of feature-checking cannot be enough to capture all wh-movement/Voice interactions, since the agreement pattern in (292) occurs in the absence of any wh-checking. Thus, the theory in the present monograph, which leverages the order of feature-checking, needs to be complemented by a theory of morphological exponence, which may independently account for certain kinds of interactions between wh-movement and agreement.

Lastly, the wh-movement/Voice interactions discussed in this monograph were limited to a single strategy for question formation, namely wh-movement to a clause-peripheral position, where the clause is built from a common set of functional projections such as V, *v*, T, Voice, C, and so on. Some languages,

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however, have multiple strategies for question formation and use different ones for the extraction of different kinds of elements, where these different strategies may include additional or different functional structure.

For example, Chung (1982) describes a particular kind of wh-agreement found in Chamorro that interacts with different strategies for question formation. Chamorro appears to exhibit two kinds of strategies for question formation. One of these looks similar to the kinds of wh-movement we have been looking at (293a). The other looks like it involves nominalization of the verb (293b).

(293) Two strategies for object questions in Chamorro

a. Hafa si Maria ha-sangan-i si Joaquin?
what UNM Maria ERG.3SG-say-DAT UNM Joaquin
'What did Maria tell Joaquin?' (Chung 1982, ex. 36b, p. 51)

b. Hafa si Maria s-in-angan-e-nña as Joaqin?
what UNM Maria <IN>-say-DAT+NMLZ-POSS OBL Joaquin
'What did Maria tell Joaquin?' (Chung 1982, ex. 35a, p. 50)

In one of these question formation strategies, namely the one in (293a), the form of the verb is identical to that found in a corresponding non-question, shown in (294).

(294) Si Maria ha-sangan-i si Joaquin ni istoria.
UNM Maria ERG.3SG-say-DAT UNM Joaquin OBL story
'Maria told Joaquin the story.' (ex. 35b, p. 50)

The second wh-question strategy, however, has what Chung analyzes as wh-agreement: instead of typical agreement morphology on the verb, the nominalized verb has an additional morpheme, *-in-*. Chamorro therefore has two intersecting parameters: (1) ± wh-agreement and (2) ± nominalization in question formation. These two parameters pattern together for object extraction, but they come apart when the moving element is ergative. In that case, we observe wh-agreement but no nominalization strategy for question formation, where the agreeing morpheme appears as *-um-*.

(295) Ergative agreement vs. wh-agreement (ex. 30, p. 49)

a. Ha-fa'gasi si Juan i kareta.
ERG.3SG-wash UNM Juan the car
'Juan washed the car.'

b. Hayi f-um-a'gasi i kareta?
who <UM>-wash the car
'Who washed the car?'

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Finally, the nominalization strategy for question formation is used obligatorily for a variety of oblique wh-elements, such as instruments, but no wh-agreement appears.

(296) Chamorro instruments (Chung 1982, ex. 37, p. 51)

a. Hafa puno'-mu ni lälu'?
what kill+NMLZ-2.POSS OBL fly
'What did you kill the fly with?'

b. Hu-punu' i lälu' ni niús.
ERG.1SG-kill the fly OBL newspaper
'I killed the fly with the newspaper.'

If we ignore the nominalization strategy, and focus only on questions like (293a) and (295b), the distribution of wh-agreement in Chamorro reminds one of Mayan AF, as well as the ergative extraction restriction discussed in §7.3. When a transitive object wh-moves, no special effects on agreement are observed. When a transitive subject wh-moves, it fails to control the usual subject agreement and is accompanied by a special morpheme. It therefore seems that Chamorro should receive the same treatment as those other languages.

To complete the analysis for Chamorro, however, we also need a description of the other strategy for question formation, which may involve nominal structure not yet explored in this monograph.

In sum, though many phenomena may be described as exhibiting an interaction between wh-movement and Voice, the source of these interactions may be different for different phenomena. This monograph has suggested that some of them arise due to the distribution of Merge-inducing features across categories, which generate different orders of feature-checking given different kinds of elements in the numeration. The way we identified phenomena that could be captured by the approach was by looking for asymmetries between different arguments and Voice contexts, with respect to what kind of interaction was observed. These asymmetries were proposed to teach us about properties of verb phrase syntax, which generate pre-movement structures.

To capture the full range of wh-movement/Voice interactions that are observed, however, we also need a good description of language-specific properties, such as the distribution and content of φ-probes, the vocabulary insertion rules of agreeing heads, and the range of question formation strategies available. Following van Urk (2015) and Baier (2018), I suggested that when a wh-movement/Voice interaction applies indiscriminantly to every wh-moving element, as in the languages with the pivot-only restriction, and languages like

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Abaza, in which every wh-moving element affected agreement, it was a reflection of properties of the agreeing heads themselves, rather than underlying structure.

Importantly, however, it is not obvious that restrictions on wh-movement of the kinds described in §7.1 and §7.2 are ever necessary to account for interactions between wh-movement and Voice. Theories based on extraction restrictions undergenerated in the case of Mayan AF and the double object movement asymmetry, and are not needed to account for wh-agreement.

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8 Conclusion

8.1 Summary

This monograph explored a theory of feature-driven Merge in which subset relationships between features sets impose constraints on structure. In some cases, subset relationships affected which element could be the complement of a head. In other cases, they affected specifier ordering. In both cases, the logic was the same: if multiple elements merge with a projection of the same head, the less featurally specified elements must merge earlier than the more specified elements, or else they will be blocked from merging altogether. While multiple orders of Merge were often available in principle, only some orders resulted in structures containing multiple elements, due to bleeding.

Deciding which element is the complement of a head has consequences for c-command between internal arguments, which affects binding and A-movement outcomes. Importantly, I argued that whenever a non-DP argument merges with *v*, because that non-DP must be the complement, VP becomes a specifier. VP-specifier-hood predicted symmetric passives crosslinguistically and backward binding in certain ditransitive structures.

Different specifier orderings at *v*P affect agreement alignment and case assignment. Assuming that the highest DP controls subject agreement/moves to the subject position, we expect contexts in which *v*P has multiple specifiers to introduce uncertainty about which one controls subject agreement. We saw that the presence of wh-phrases in the clause creates opportunities for *v*P to have multiple specifiers, which creates potential for wh-movement/Voice interactions. In some cases, wh-Merge was permitted to either precede or follow argument-Merge, leading to variation in the morphosyntax of transitive subject questions. In other cases, one or the other operation was forced to occur first, due to thematic considerations (as in transitive object questions) or economy considerations (as in indirect object passive questions), eliminating some crosslinguistic variation.

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The feature-checking logic was able to predict complement-hood and specifier ordering, and feature-checking was proposed to be the driver of every kind of Merge. The theory was therefore able to account for interactions between external Merge, A-movement, and Ā-movement with a very limited inventory of features and categories. I argued that we only need two verbal categories to participate in the functional hierarchy, each of which has two argument-introducing features ([·*D*·] and [·*X*·]), one of which introduces the other (*v* has [·*V*·], encoding the functional hierarchy), and the higher of which controls successive cyclic wh-movement (*v* has [·*wh*·]). All other arguments and argument-introducing heads were proposed to merge with either V or *v*, licensed by the features [·*D*·] and [·*X*·]. The fact that features could be checked by Move or Merge (or not at all) created a space of possible structures and derivations, of which every language utilizes some subset.

A crucial part of the theory was the conjecture that Merge features are not idiosyncratic properties of individual lexical items. I proposed instead that they are assigned at the level of the category. Thus, every lexical verb has access to the same set of features, accounting for regularities in verb phrase syntax that transcend individual verb meanings and pronunciations. Though every verb has access to the same features, different structures are nonetheless possible due to unspecified orders of operations and the possibility that features may go unchecked without causing a crash. The fact that every verb *only* has access to this set of features also placed constraints on the number of possible arguments a verb can merge with, which prevents the lexicon from containing elements that s-select for more.

The proposed categories and their features were intended to be universal for every language, thus allowing us to draw comparisons between different languages' passives, dative alternations, and wh-questions within a very limited space of possible variation. Different languages' syntax was only permitted to vary in the distribution of φ-probes, the representation of inherent case, and the pronunciation or non-pronunciation of certain heads.

Finally, this approach to Merge constrains the underlying and surface distribution of arguments through general constraints on clause construction. In other words, the features on arguments and the heads they merge with are the primary factors that determine what positions arguments can appear in and what operations they are accessible to. I showed that this approach provided a uniform analysis of regularities in verb phrase syntax and the crosslinguistic profile of wh-movement/Voice interactions. Moreover, I argued that the present theory has conceptual and empirical advantages over approaches that analyze wh-movement/Voice interactions with constraints on transformation.

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We looked at several analyses that argued that wh-movement from certain contexts needed to be banned in order to explain the morphosyntax of certain wh-questions. However, we saw that the proposed restrictions on wh-movement had clear exceptions within the languages they were proposed for, and accounted for only a subset of the kinds of wh-movement/Voice interactions that we find. This raised questions regarding the ways that different languages and constructions can vary, given that constraints on movement are thought to be universal.

By contrast, the present approach included no new constraints on movement. It is nonetheless a very restrictive theory due to the limited number of features and categories and the general conditions on feature-checking. The space of possible structures predicted by the theory was shown to predict variation where we found it, and universality where we found it.

8.2 Looking Ahead

One of the features of the proposal was that verb phrase syntax is sensitive to very few feature distinctions. The features involved in building *v*Ps were proposed to be [wh], [D], [V], and [X]. In addition to those features, we considered heads that also have φ-probes with various specifications, suggesting that features like [φ] and [part] should be added to that list. However, a number of conceptually available features, like [C], [P], [A], and [T] were argued to never be explicitly c-selected by verbal heads, raising the question of whether they belong to the inventory of features at all.

If the features driving syntactic operations reflect the inventory of possible feature distinctions, this approach raises several questions for future inquiry. First, looking beyond verb phrase syntax, what other features might we need to capture phrase structure in general?

Though much future research is needed to decide on the complete inventory, there is good reason to suspect that we should add at least [N] to the list. Adding [N] would capture a basic fact about the nominal domain, which is that determiners appear to select for NPs and not other phrases like PPs and CPs.[1]

(297) a. the [book]
b. *the [on the table]
c. *the [that Mary left]

1. Even this seemingly straightforward addition to the feature inventory faces challenges from the literature on relative clauses, however, where it is sometimes argued that determiners *can* select for clauses (R. Kayne 1994, among others). Similarly, a reviewer notes that the pattern in (297) might be language specific—see Lohndal (2014b) for examples like (297c) in Norwegian.

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Beyond the verbal and nominal domains, the picture of selection does not obviously point to other important feature distinctions, though other features may be needed on closer inspection. The functional hierarchy that defines the inflectional domain (TAM) could plausibly be governed by s-selection rather than c-selection, for example. If the meanings of temporal operators independently explain this part of the functional hierarchy, we might not need tense heads to c-select for features like [Asp], for example—TAM projections could be merged in response to $[\cdot X \cdot]$[2], though this needs to be verified by additional research.

A second question raised by this approach is: What is the space of possible heads and selectional patterns entailed by the inventory of features? We have discussed two verbal heads, V and *v*, one of which has features $[\cdot D \cdot]$ and $[\cdot X \cdot]$, and the other of which has $[\cdot D \cdot]$, $[\cdot X \cdot]$, $[\cdot V \cdot]$, and $[\cdot wh \cdot]$. Is every imaginable combination of Merge features realized as a distinct head?

It seems likely that many of these combinations are observable. A head that only selects for $[\cdot D \cdot]$, but not $[\cdot X \cdot]$, could be a preposition. A head that selects for nothing at all could be a modifier.[3] If TAM particles are all merged in response to $[\cdot X \cdot]$, as considered earlier, maybe complementizers have the combination $[\cdot X \cdot]$ and $[\cdot wh \cdot]$, which allows them to select for a TP complement and also host wh-movement at their edge. This is not meant to be a comprehensive discussion of all of the possible feature combinations but is meant to demonstrate some possible ways of interpreting the space of feature bundles.

It is also possible that more than one kind of element has the same set of features. For example, English T heads are usually thought to attract a DP specifier, suggesting that they have $[\cdot D \cdot]$. They also select for an aspect projection as their complement, which could merge in response to $[\cdot X \cdot]$. If this is right, T would have the same features as V, leading to questions about whether/how the syntax distinguishes these kinds of elements in clause construction.

There are also some combinations that might not exist. For example, I know of no head that selects for $[\cdot D \cdot]$, $[\cdot X \cdot]$, and $[\cdot V \cdot]$, to the exclusion of $[\cdot wh \cdot]$. Is this an accidental gap? Or are there implicational relationships between these features that require certain ones to appear in the presence of others? For example, could the presence of $[\cdot V \cdot]$ entail $[\cdot wh \cdot]$ on a head? If so, where does this entailment relationship come from?

Every new feature added to the inventory increases the combinatorial possibilities for selectional patterns that we should observe. The crucial question

2. See Bjorkman (2011), however, for a treatment of inflectional morphology that relies on agreement, which may need to further distinguish certain kinds of inflectional features from others.

3. Though see Steedman (1996) for a proposal that adjuncts select their hosts.

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that guides any investigation of the feature inventory is therefore: Are there any kinds of heads that we observe that are *not* covered by the features listed here? If not, it could be an indication that no other features are in the inventory. My investigation of the verbal domain did not produce any such heads, but there are other syntactic domains to explore.

This monograph has therefore provided some preliminary support for an approach to syntactic theory, whose full explanatory power is still quite underexplored. Properties of verb phrase syntax, and how it interacts with wh-movement and agreement crosslinguistically, have motivated a reduction in the set of features that syntactic operations can reference. This was shown to simplify conditions on operations by limiting the possible combinations of structures that are available in the first place. To complete the picture, we need to find out just how small the feature inventory is and what structures are available more generally.

8.3 In a Nutshell

Though there is still much work to be done, I want to conclude with a brief comment on what has been achieved. This monograph demonstrated that a small inventory of structure-building features, bundled into categories and combined with a set of conditions on structure-building, produces a limited set of possible structures associated with the verbal domain. This set of possible structures was proposed to constrain possible crosslinguistic variation: while languages can choose which subset of the space to realize, they cannot produce structures outside of this space.

Importantly, the fact that the inventory of features in the verbal domain included [wh] predicted a different space of verb phrase structures in wh-questions compared to non-questions, accounting for interactions between wh-movement and the morphosyntactic alignment of the clause. Even more importantly, the same theory that predicted these interactions also predicted other puzzling facts about the verbal domain, even in non-questions, such as the availability of backward binding and symmetric A-movement in certain ditransitives. I argued that the unifying thread tying each of these phenomena to the others was that they each presented a case in which one argument checked a subset of the others' features.

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